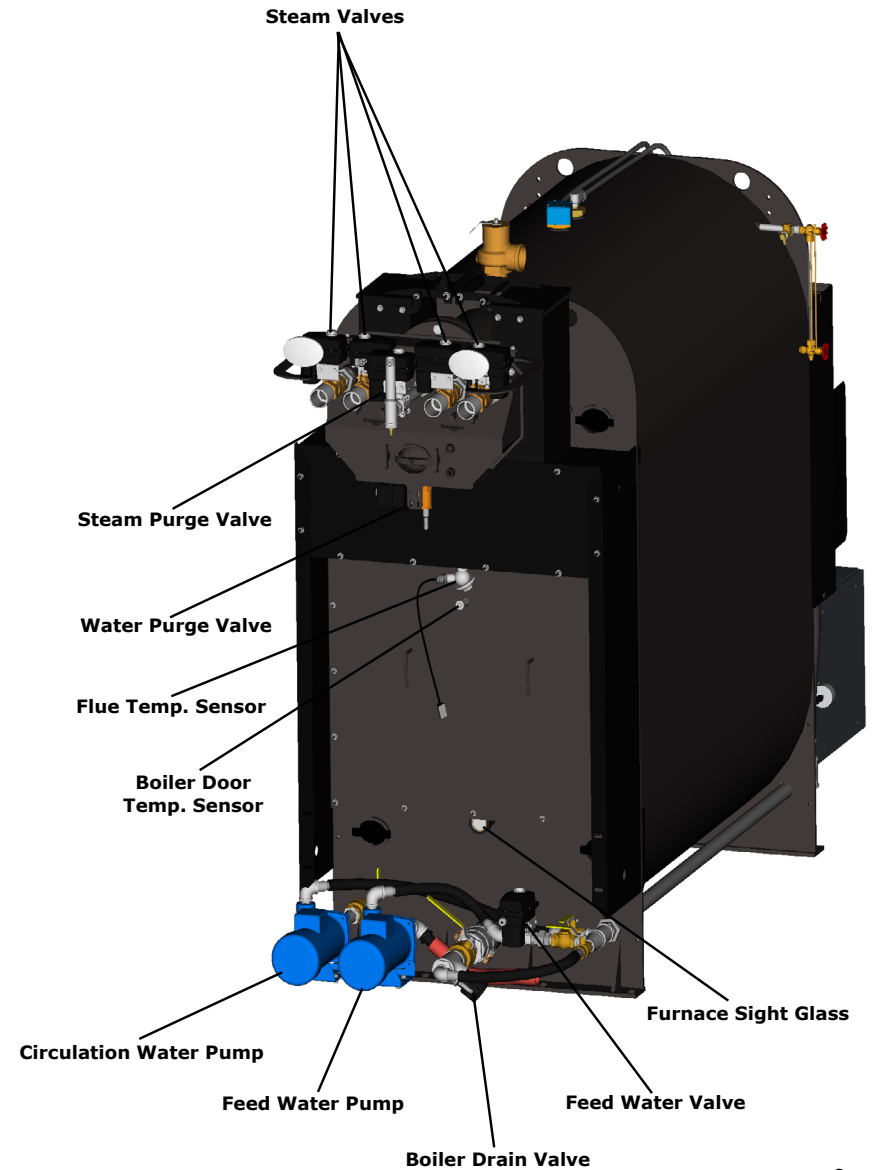
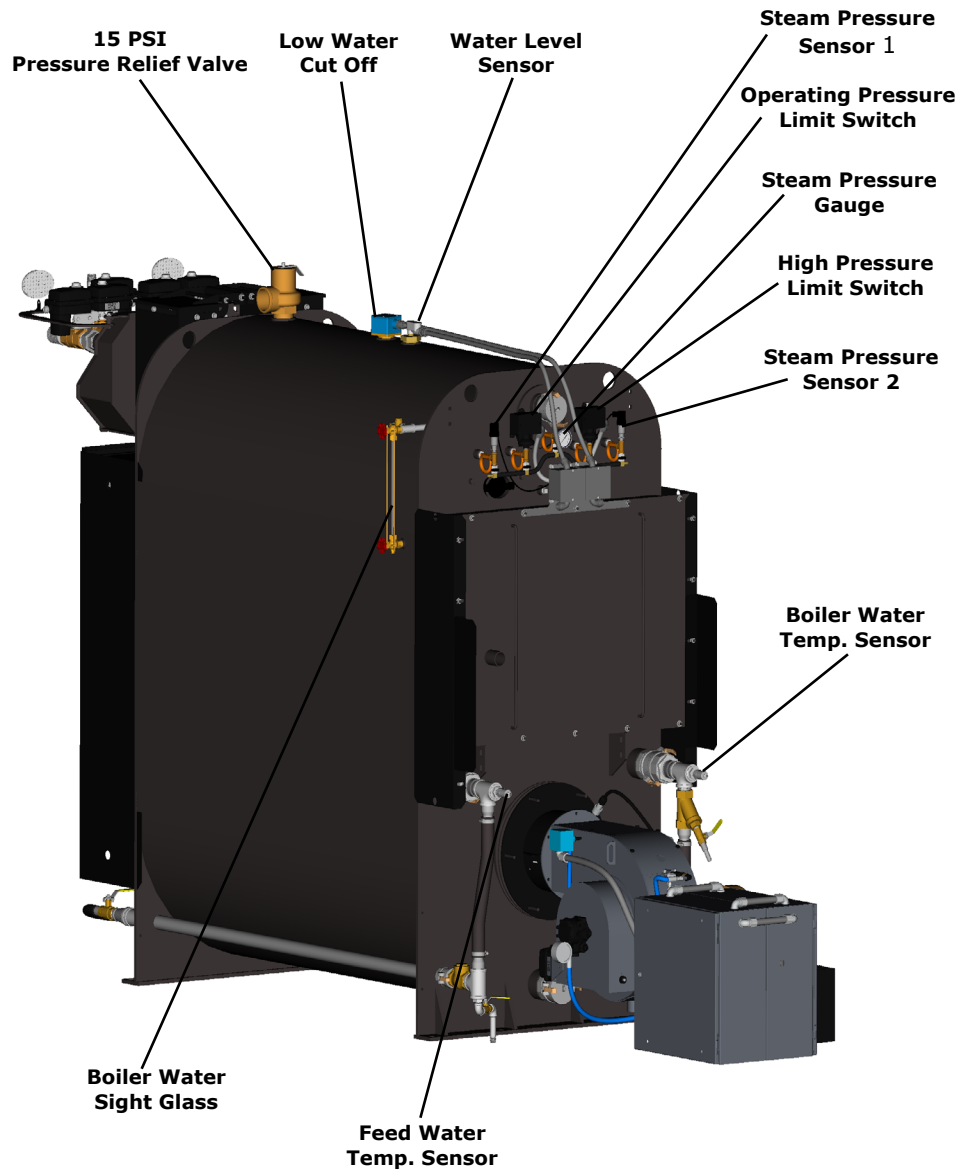
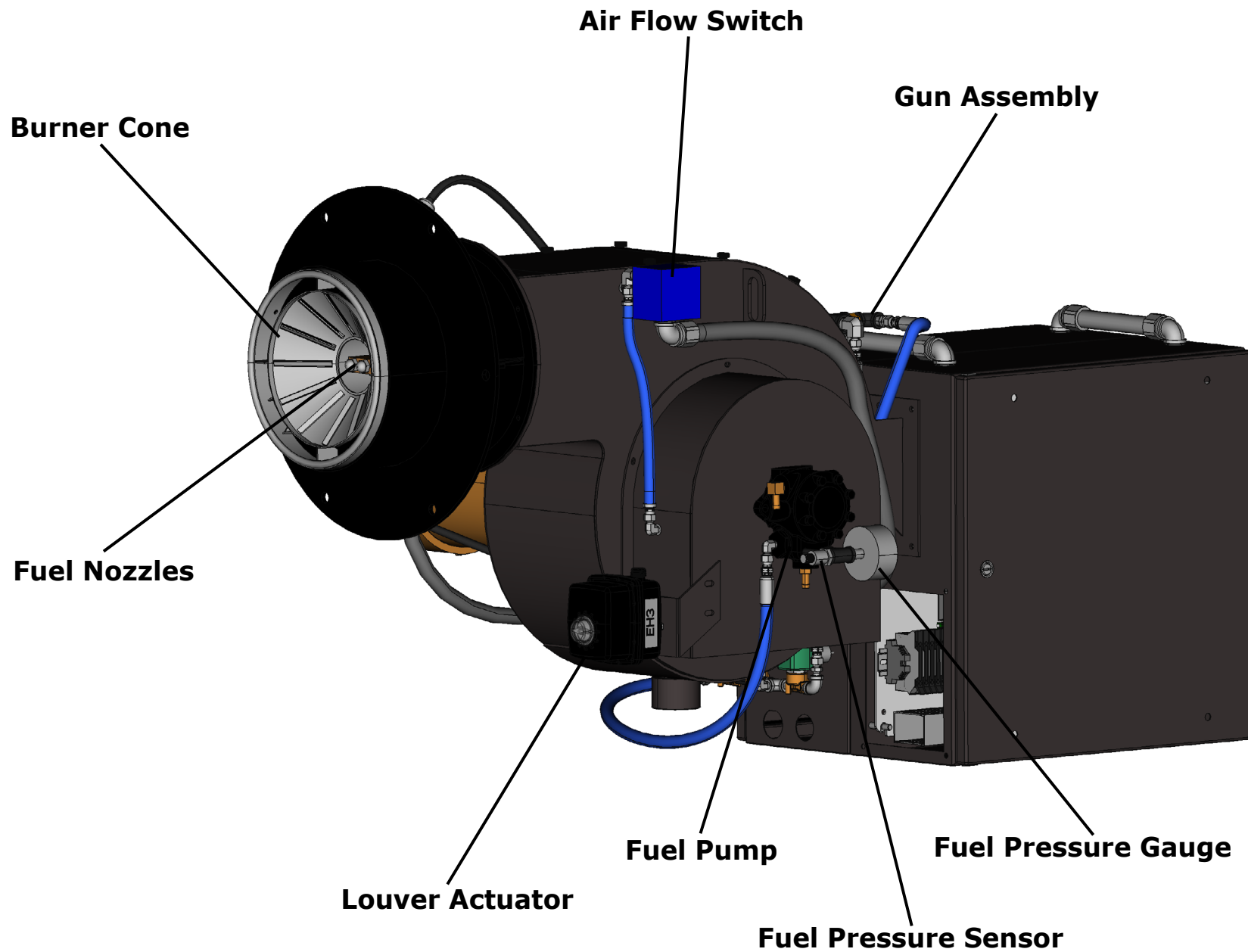


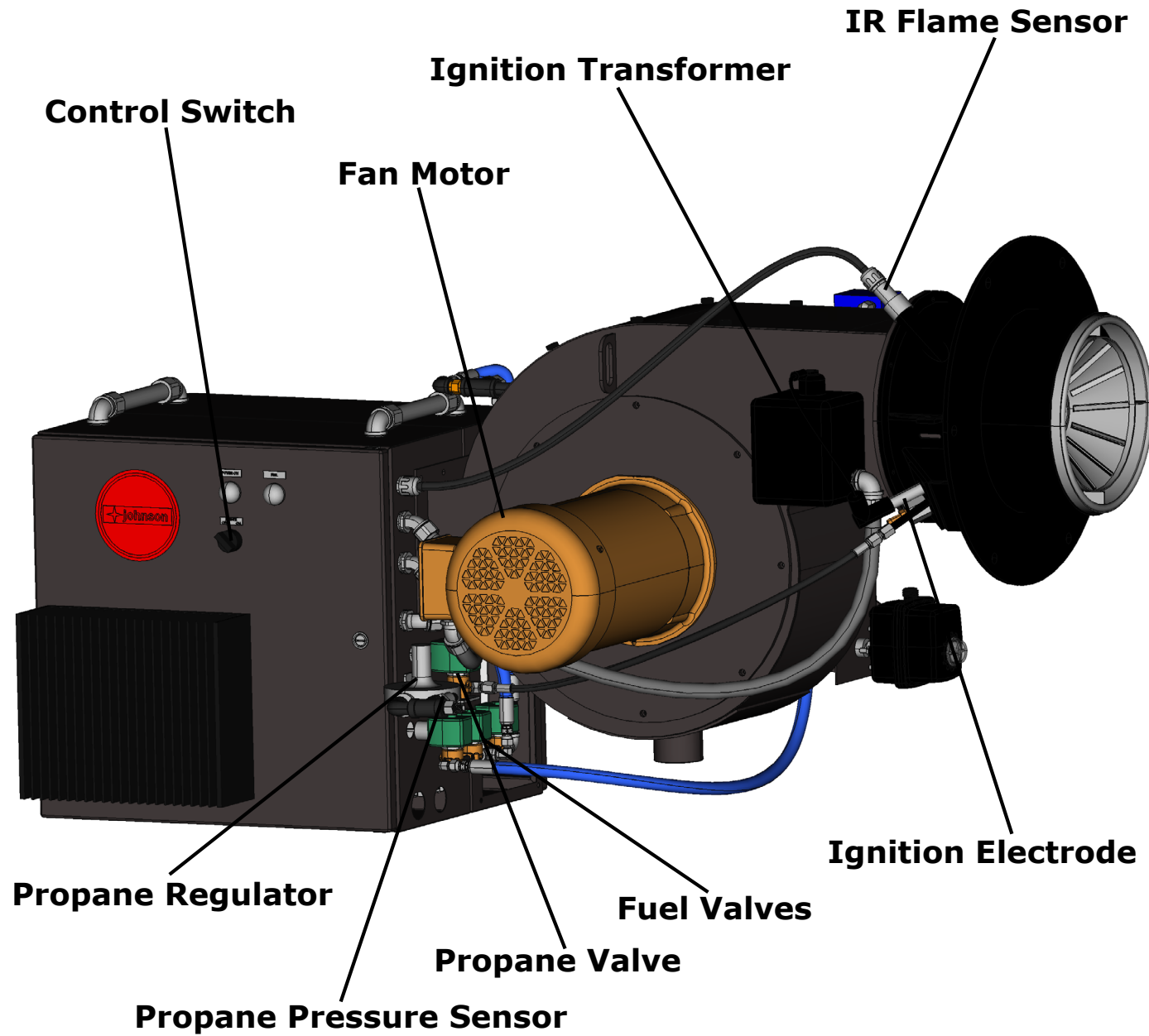
STAH ELI WEST

# Service Manual

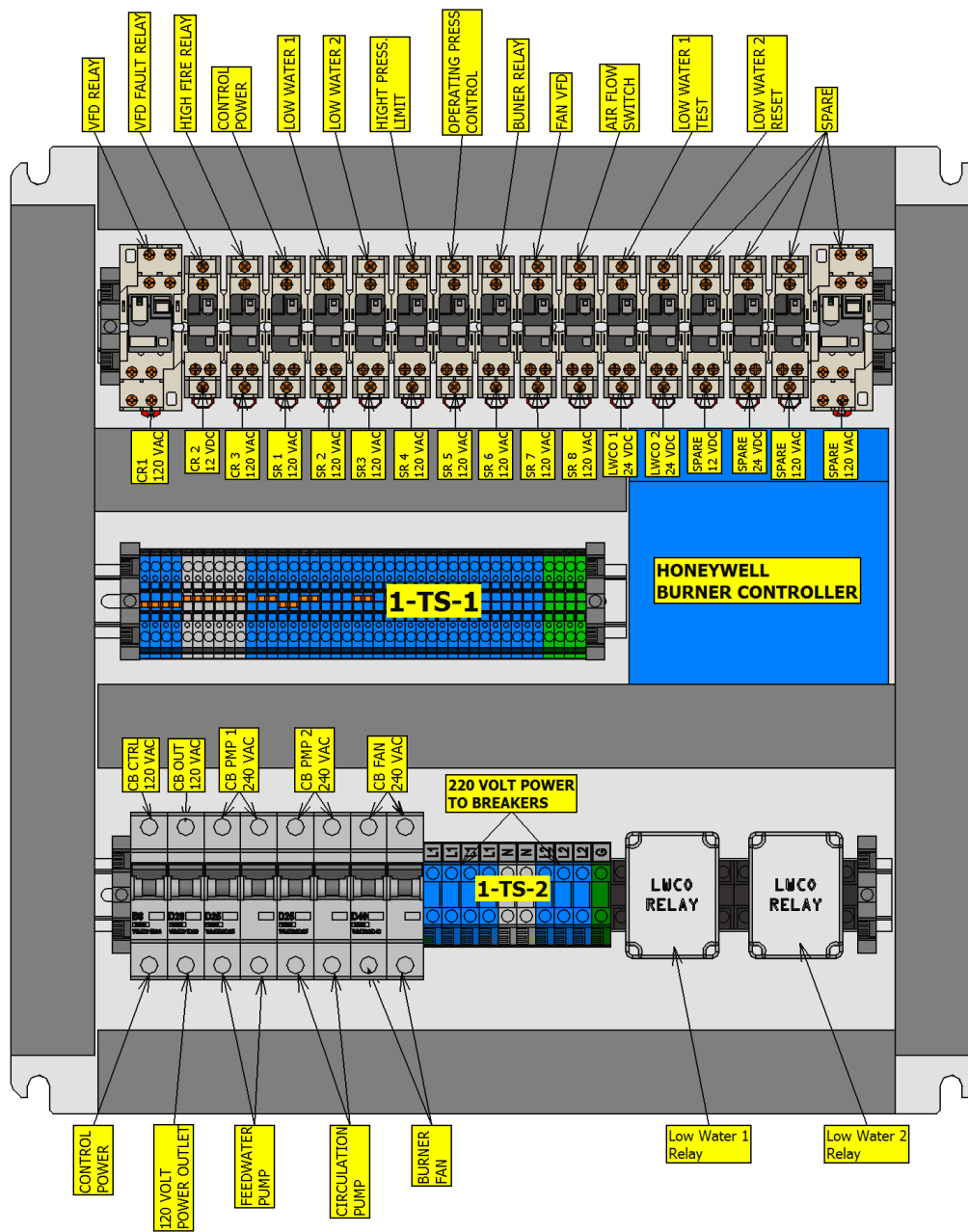
Revised October 26, 2016





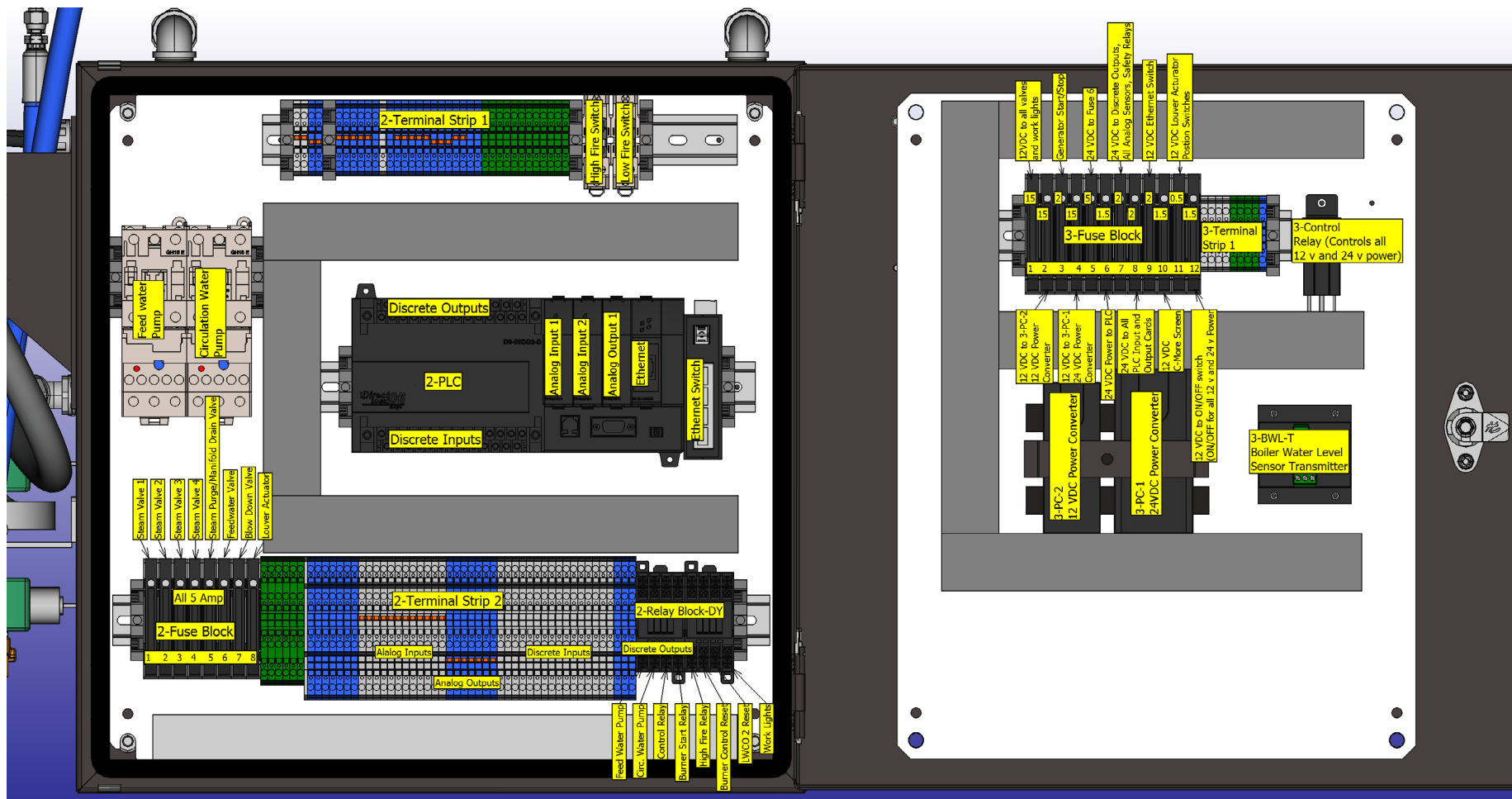






# 6210 Panel 1

# 6210 Panel 2 & 3



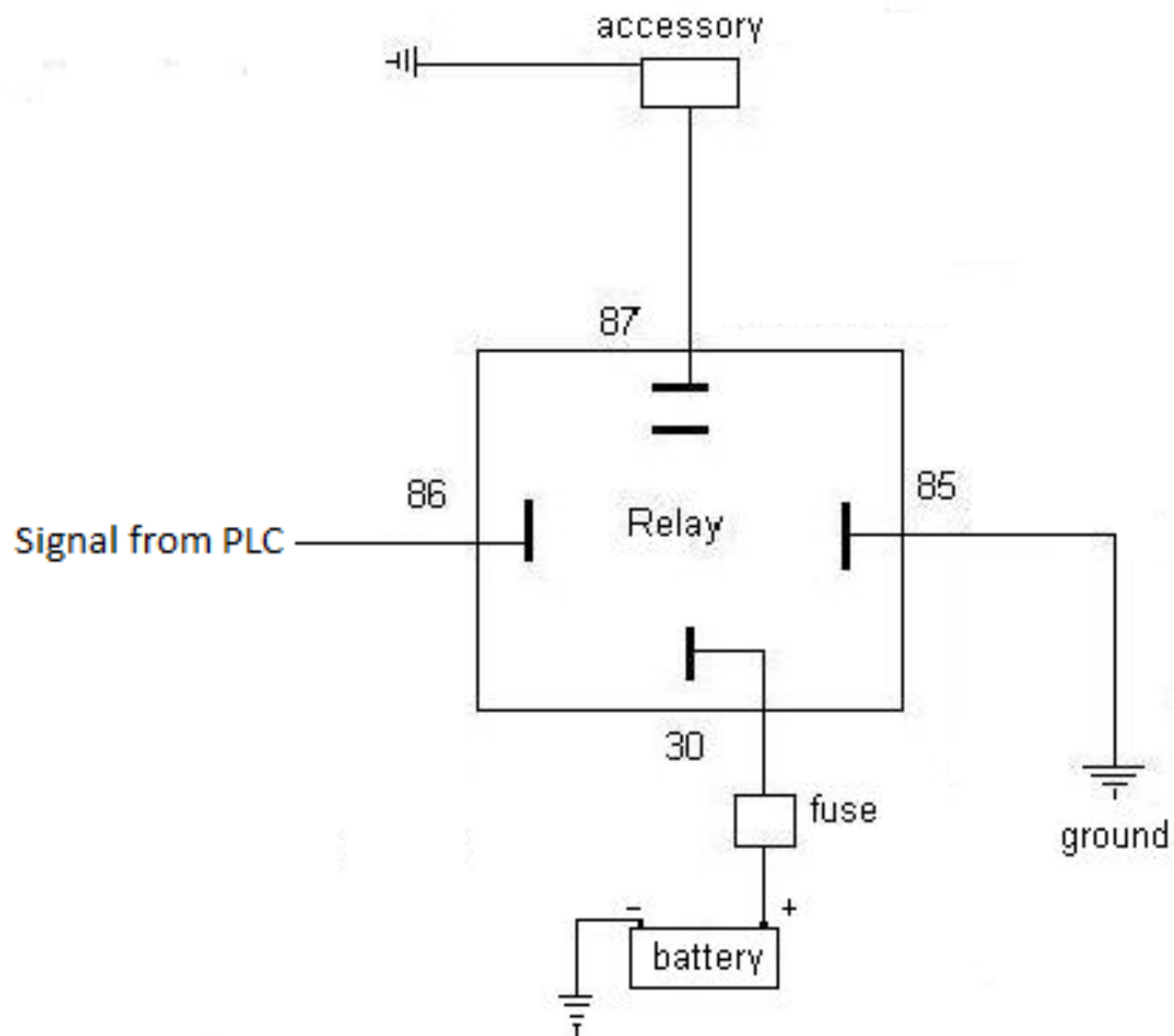
# Fuse Labels

**Note:** All fuses are Buss Type  
AGC-5-R

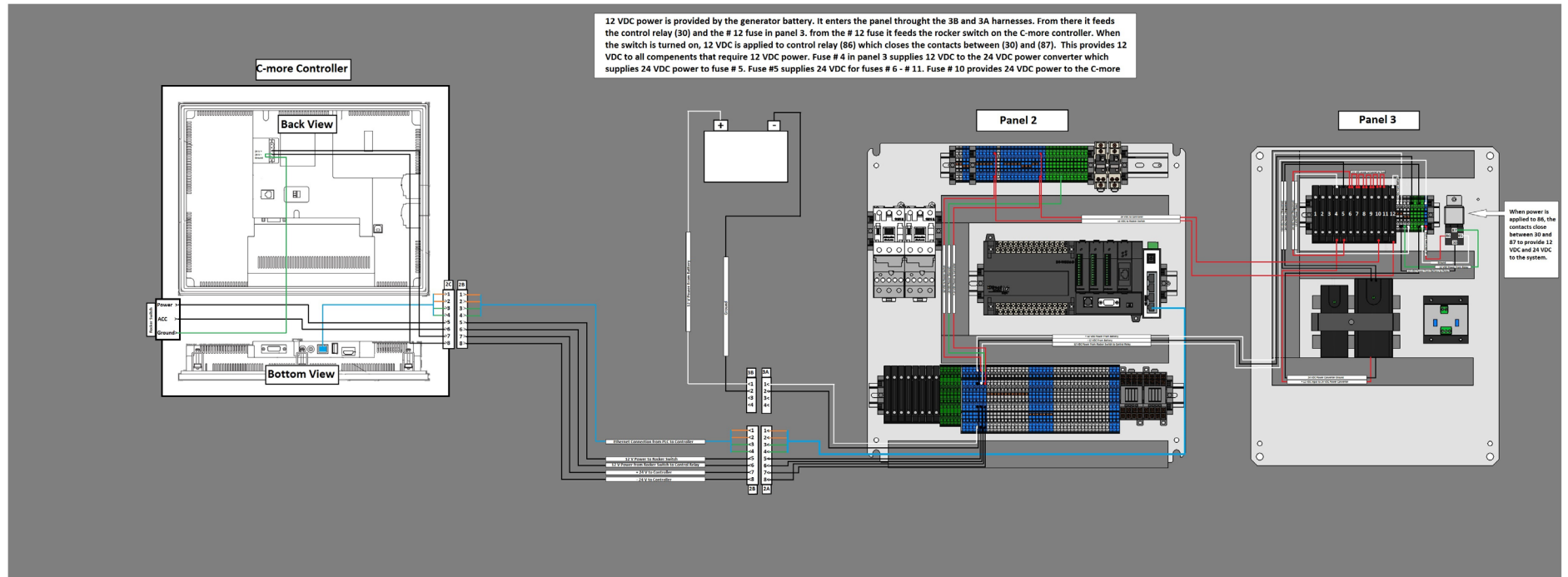
F1	(5) Steam Valve 1
F2	(5) Steam Valve 2
F3	(5) Steam Valve 3
F4	(5) Steam Valve 4
F5	(5) Steam Purge/Manifold Drain
F6	(5) Feed Water Valve
F7	(5) Blow Down Valve
F8	(5) Louver Actuator

**Note:** All fuses are Buss Type AGC-(Amp Rating)-R

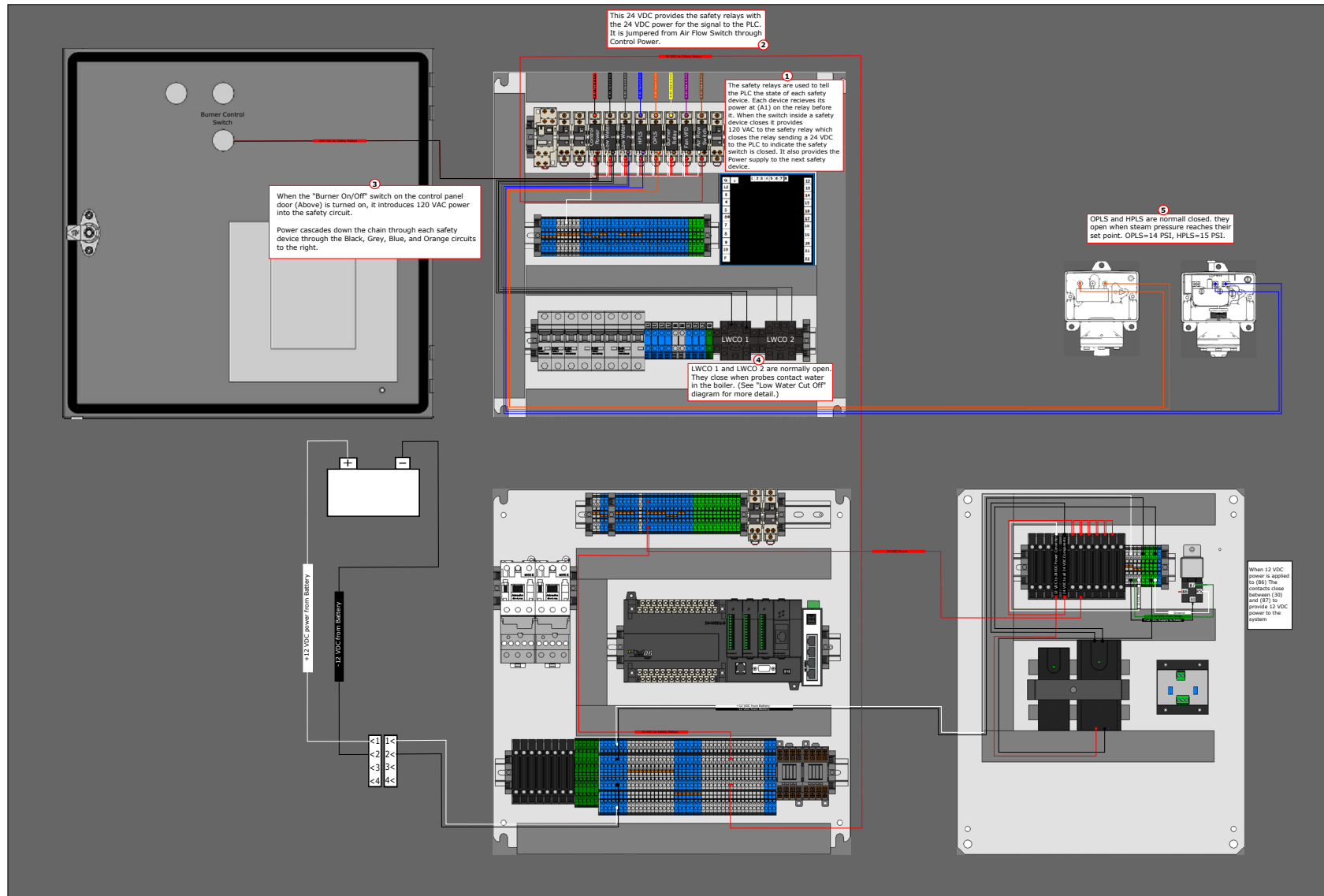
F1	(15) 12 VDC to all Valves and Work Lights
F2	(15) 12 VDC to 12 VDC Power Converter
F3	(2) 12 VDC Generator Start/Stop
F4	(15) 12 VDC to 24 VDC Power Converter
F5	(5) 24 VDC to fuse 6
F6	(1.5) 24 VDC Power to PLC
F7	(2) 24 VDC to Discrete Outputs, all Analog Sensors, Safety Relays
F8	(2) 24 VDC to all PLC Input and Output Cards
F9	(2) 24 VDC to Ethernet Switch
F10	(1.5) 24 VDC to C-more Touch Screen
F11	(0.5) 24 VDC to Louver Actuator Position Switches
F12	(1.5) 12 VDC to ON/OFF Switch on C-More Touch Screen



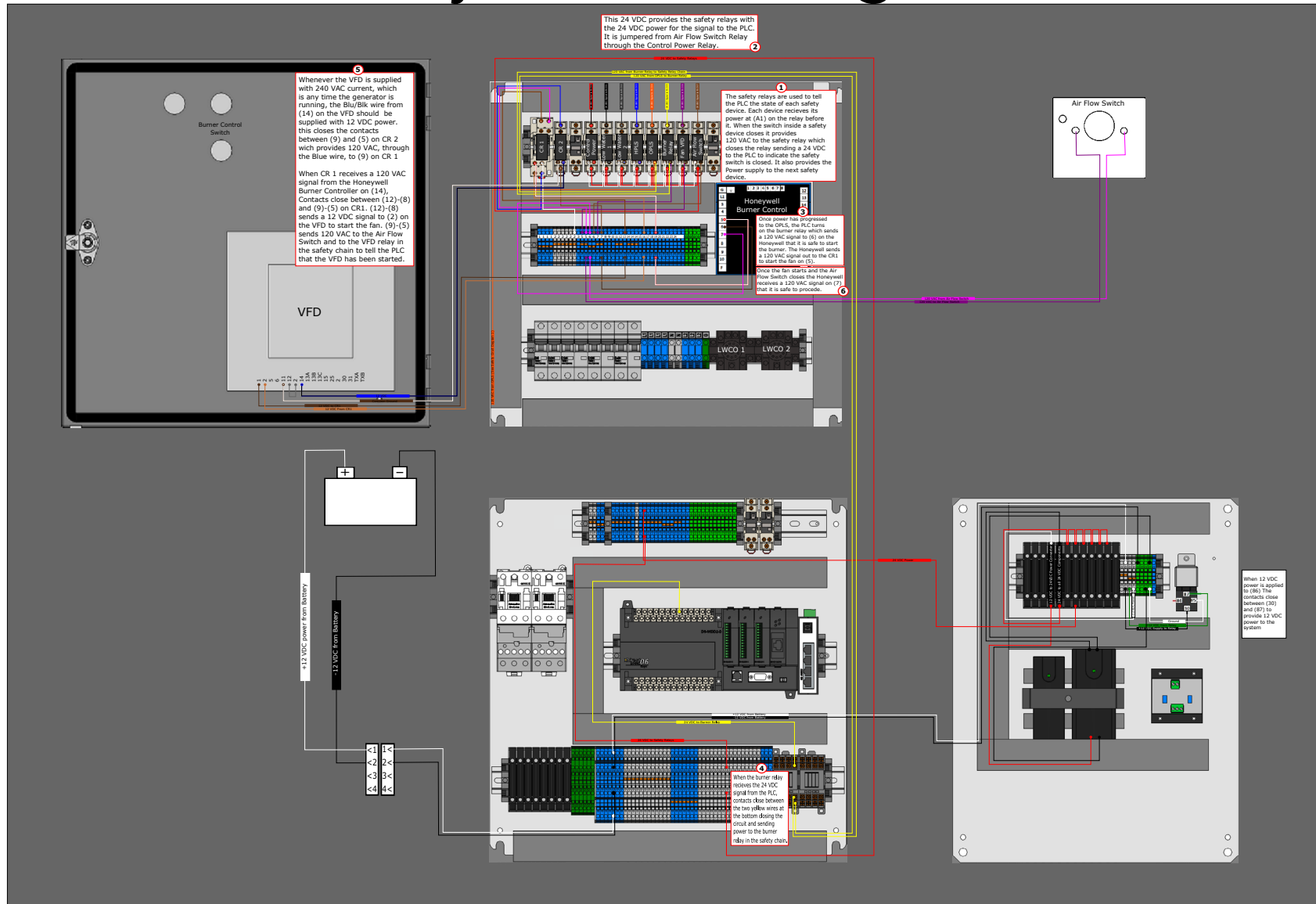
# C-More Touch Screen Power Diagram



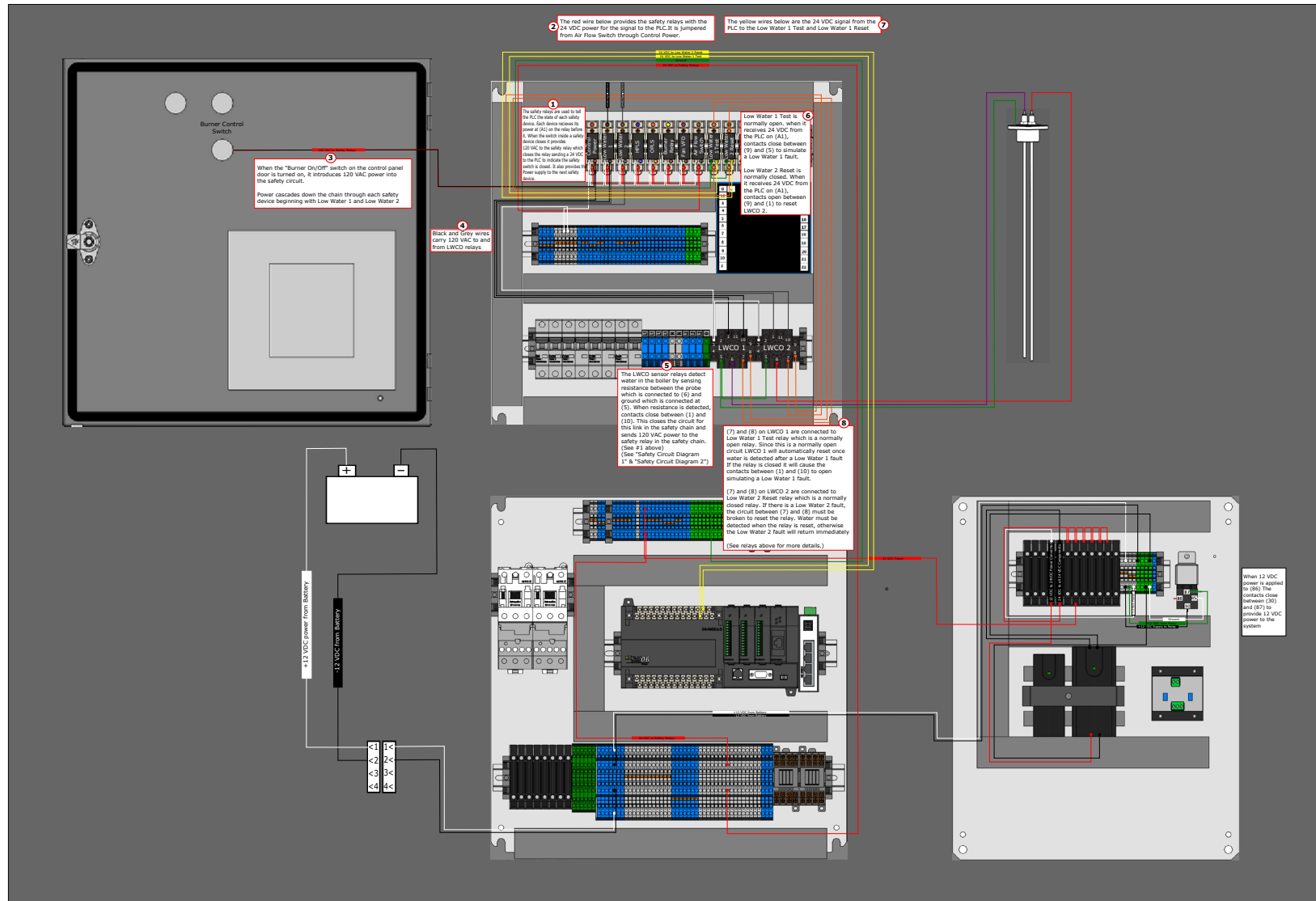
# Safety Circuit Diagram 1



# Safety Circuit Diagram 2

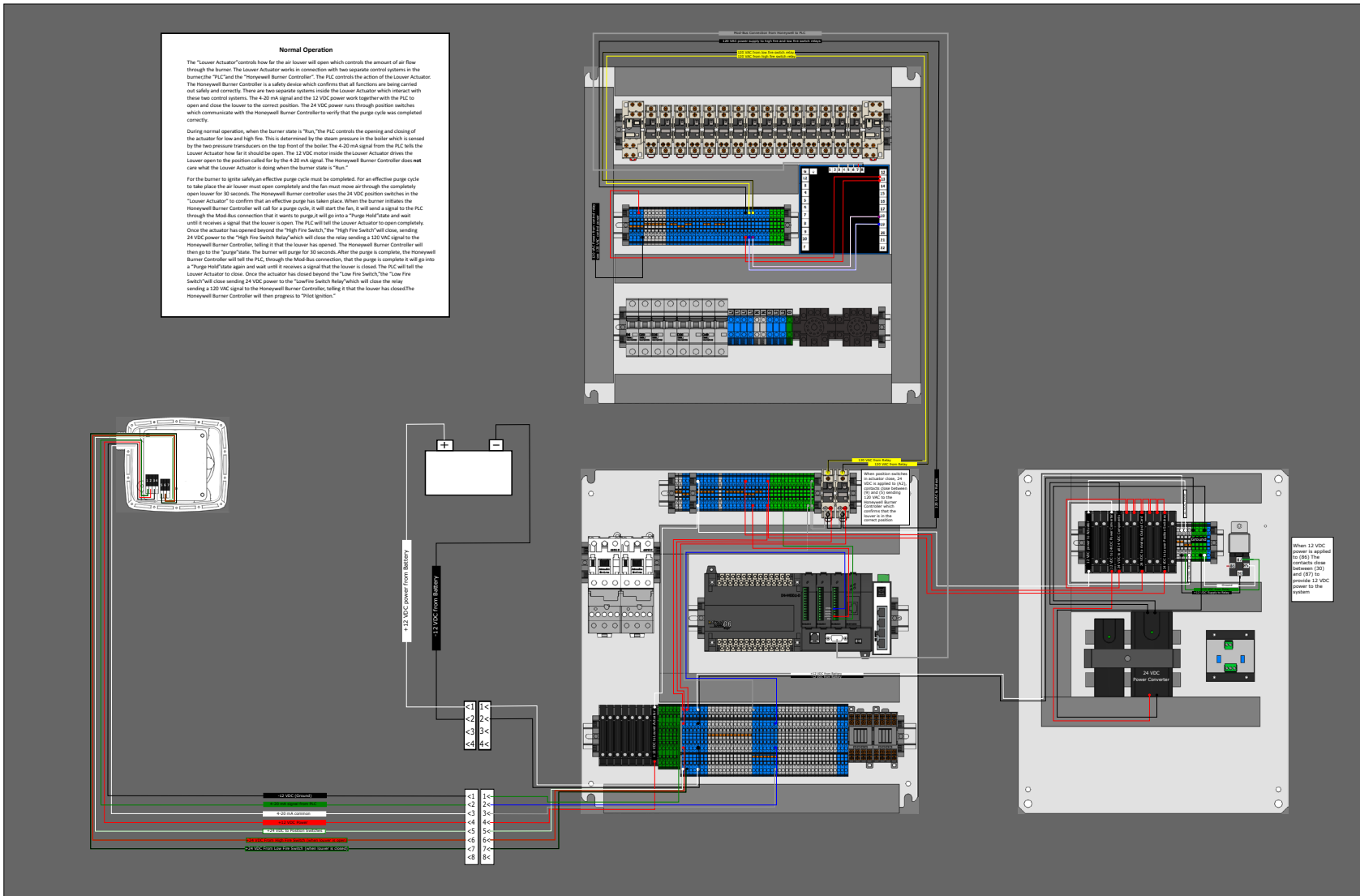


# LWCO Diagram

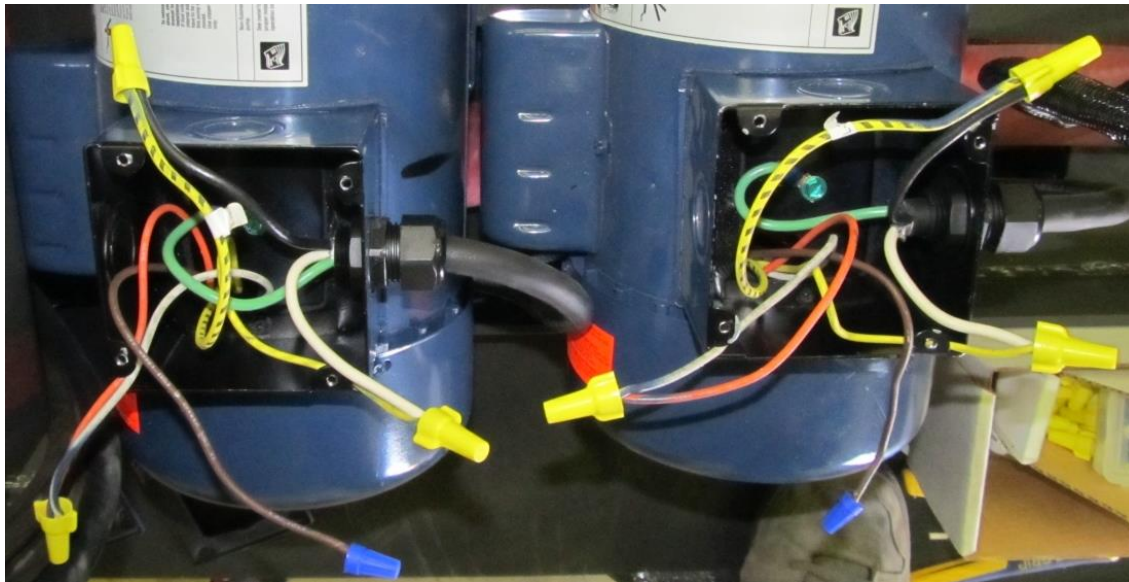




# Louver Actuator Diagram



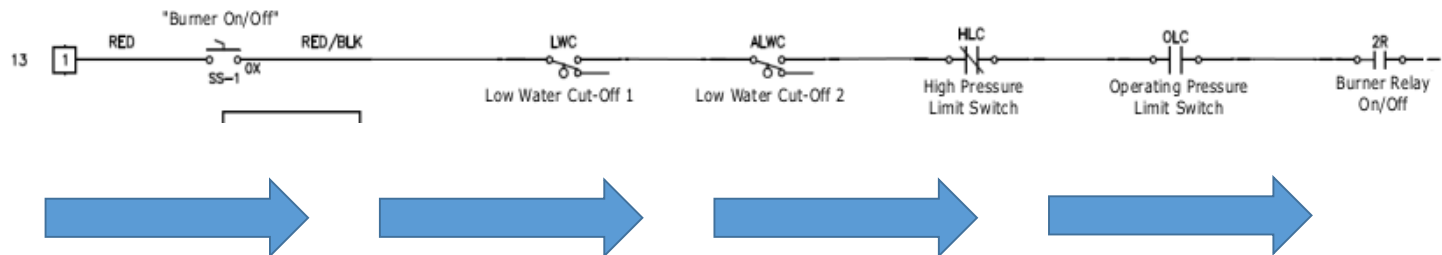
# Pump Wiring



Yellow/Black	—————	Black
Brown	—————	Cap
Orange	—————	
White	—————	
Yellow	—————	White
Ground	—————	Green

# Safety Circuit

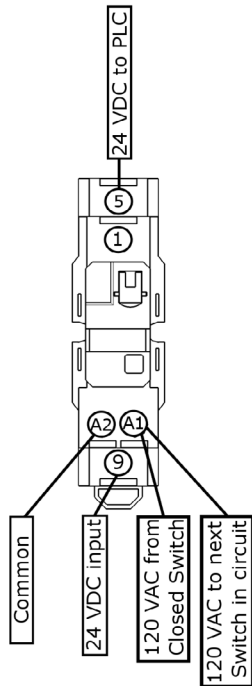
The safety circuit is a chain of switches that determine whether the burner may be operated safely. The circuit is designed so that each switch, when closed, provides the power for the next switch in the chain. In order for the fire to run, power must reach the end of the chain.



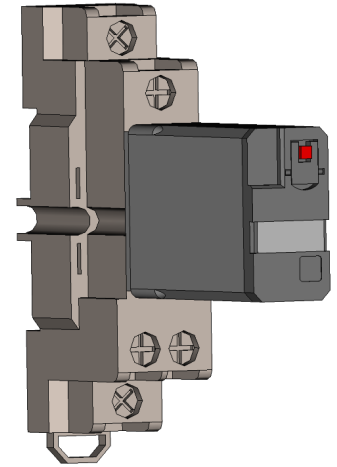
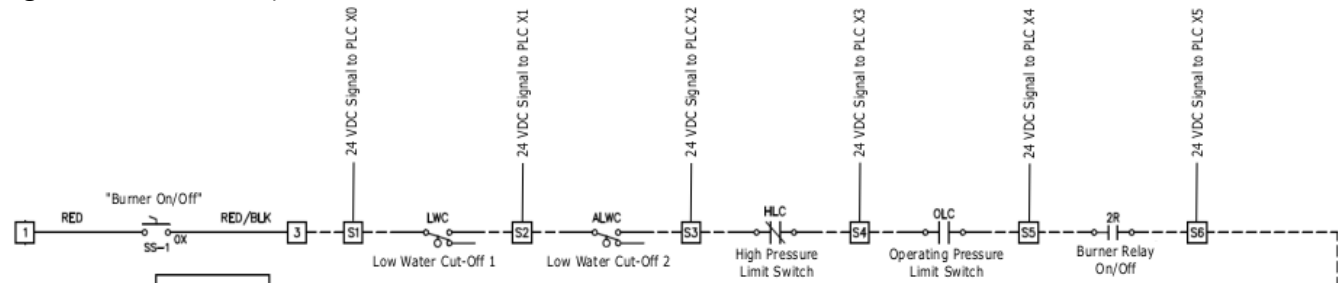
120 VAC power is introduced into the chain when the “Burner On/Off” switch, on the control panel door, is turned on. Power flows down the chain as each switch closes. Each component in the system will be discussed in more detail later.

# Safety Relays

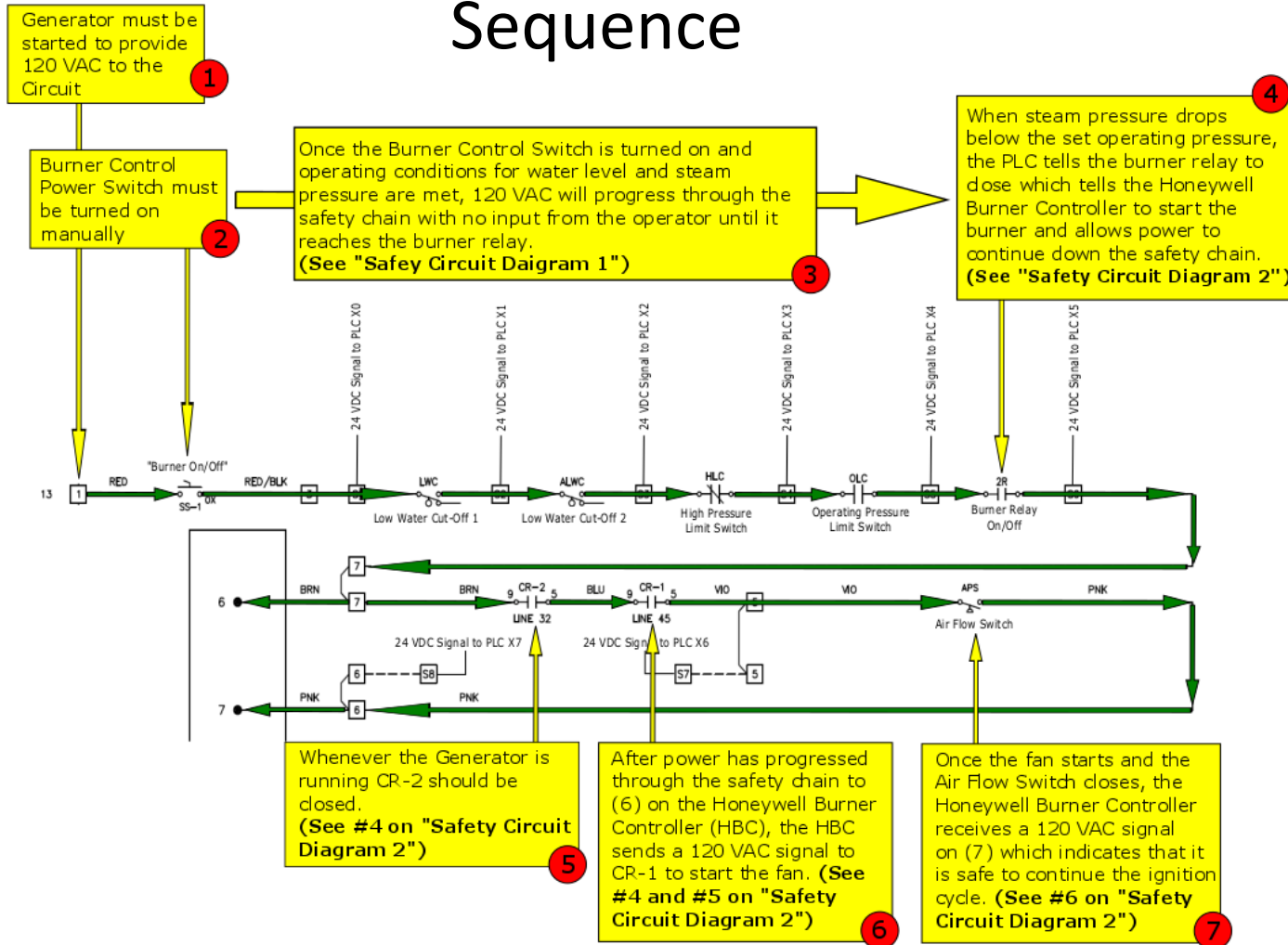
In order for the PLC to know the state of the safety circuit, a 24 VDC signal must be sent from each component in the circuit to the PLC. To accomplish this we use a series of relays that is supplied with 24 VDC power and is switched by the 120 VAC as it flows through the safety device circuit.



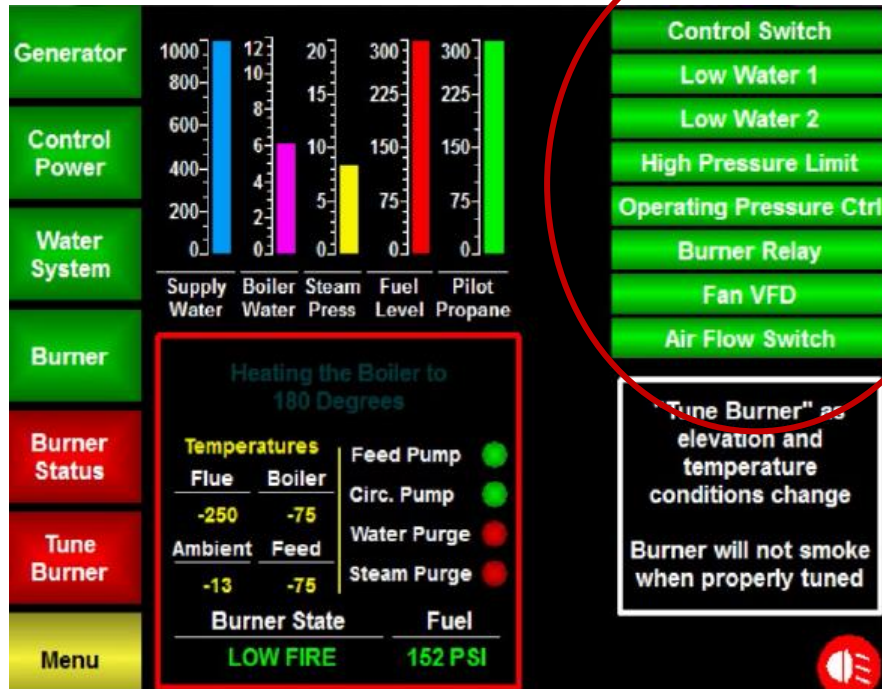
The safety relays are normally open. (A2) is a common neutral 120 VAC for all relays, (9) is always supplied with 24 VDC power, When a safety switch in the system closes it allows 120 VAC power to flow to (A1). When (A1) receives 120 VAC from the switch, contacts close between (9) and (5) sending the 24 VDC signal to the PLC that the safety switch is closed. The 120 VAC supply for the next safety switch in the chain is also connected to (A1). Therefore, when (A1) receives power it tells the PLC that the switch is closed and it provides power to the next switch in the chain. In this way the power cascades down the safety circuit sending information to the PLC along the way. (See "Safety Circuit Diagram 1" & "Safety Circuit Diagram 2" for details.)



# Sequence



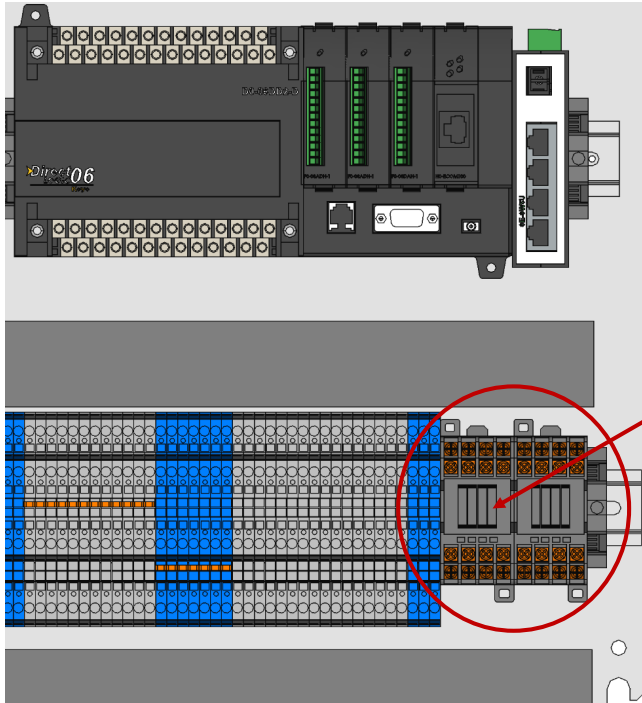
# Sequence



As each safety device engages and the signal is sent to the PLC, indicators on the "Systems Start" screen will turn green to indicate that the device is engaged.

**Remember:** The Safety Relays send this signal to the PLC. If the device is engaged but the PLC is not receiving the signal that it is engaged, check the relay.

# Burner Relay



The Burner Relay is the switch the PLC uses to turn the burner on and off. It is located in the safety chain after the safeties for water level and pressure. Therefore if for any reason a safety trips for water level or pressure it will cut off the power to the relay and shut off the burner regardless of what the PLC is telling it to do.

The Burner Relay is located in the bottom right corner of panel 2. It receives a 24 VDC signal to the coil from the PLC which switches the 120 VAC power in the safety circuit. (See "Safety Circuit Diagram 2.")

# Burner Relay

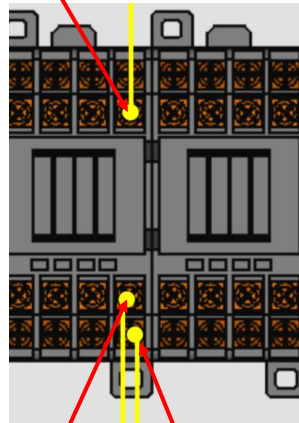
Certain conditions must be met before the PLC will turn on the Burner Relay:

1. Low Water Cut Off 1 and Low Water Cut Off 2 must be engaged. (See “Low Water Cut Off.”)
2. High Pressure Limit Switch must be engaged (See “High Pressure Limit Switch (HPLS).”)
3. Operating Pressure Limit Switch must be engaged (See “Operating Pressure Limit Switch (OPLS).”)
4. Water level in the boiler must reach the “Boiler Water Level Target”(See “Water Level Control.”)
5. Steam pressure must be below operating set point (See “Steam Pressure Control.”)



# Burner Relay

Once all the conditions for start-up are met, the PLC sends a 24 VDC signal here to close the relay



When the coil receives 24 VDC from the PLC, Contacts close supplying this wire with 120 VAC (See "Safety Circuit Diagram 1")

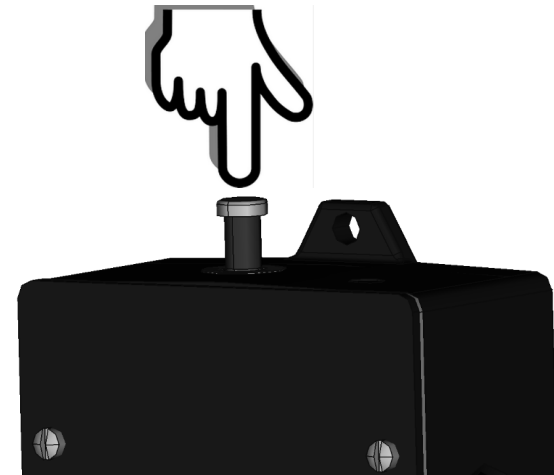
If water level and steam pressure are within normal limits for operation, this terminal will be supplied with 120 VAC (See "Safety Circuit Diagram 1")

# High Pressure Limit Switch (HPLS)



The HPLS is a safety device which shuts off the fire if the steam pressure in the boiler gets too high. The HPLS is normally closed as long as the steam pressure is below the set point. If the steam pressure exceeds the set point, the switch trips and breaks the safety circuit which shuts down the fire. The HPLS should only trip if the OPLS fails to shut off the flame (See Operating Pressure Limit Switch). When steam pressure drop back below the set point, The HPLS requires a manual reset to let the burner restart. (see Safety "Circuit Diagram 1" and "Safety Circuit Diagram 2")

To reset the HPLS pressure in the boiler must drop below the set point and the switch must be reset manually by pressing firmly on reset button on top of the sensor.



# High Pressure Limit Switch (HPLS)



The HPLS set point may be adjusted by turning this nut. Since the HPLS is a backup to the OPLS it is normally set 1 PSI higher than the OPLS

- Clockwise increases set point.
- Counter clockwise decreases set point

Operating Range	Recommended Set Point
0-15 PSI	15 PSI

# Low Water Cut Off

## (LWCO)

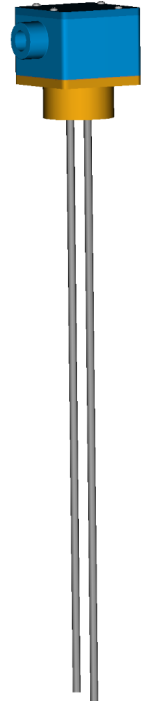


The Low Water Cut Off (LWCO) is a safety device designed to ensure that the water level in the boiler never drops below a safe level during operation. The LWCO consists of two probes. One is slightly longer than the other. Each probe is a totally separate sensor from the other. The tip of the probes sit at the lowest safe level in the boiler. When the water level in the boiler rises enough that it touches the tip of the probe, the LWCO knows that the water is high enough to safely operate. If the water level in the boiler drops so that the water is no longer touching the probe, the LWCO knows that the water is below the safe operating level and shuts off the burner.

**The Low Water Cut Off has only two Functions:**

- 1. Shut off the burner if water level drops below safe level**
- 2. Tells the PLC to start the Circulation Pump when the LWCO is engaged.**

*See “LWCO Diagram” for more detail on the Low Water Cut Off.*



# Operating Pressure Limit Switch (OPLS)



The OPLS is a safety device used to shut off the fire if the steam pressure in the boiler gets too high. The OPLS is normally closed as long as the steam pressure is below the set point. If the steam pressure exceeds the set point, the switch trips and breaks the safety circuit which shuts down the fire. When steam pressure drops back below the set point, the OPLS will automatically reset. (see Safety "Circuit Diagram 1" and "Safety Circuit Diagram 2")

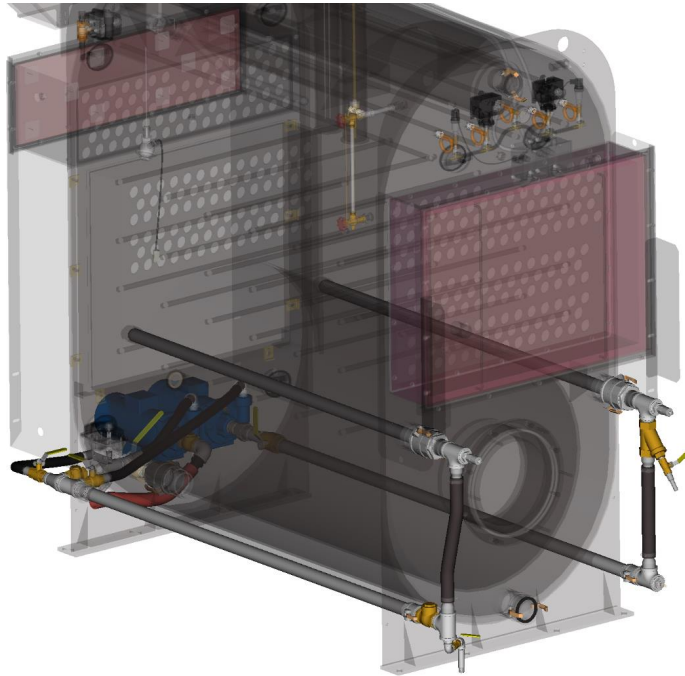
# Operating Pressure Limit Switch (OPLS)



The OPLS set point may be adjusted by turning this nut.

- Clockwise increases set point.
- Counter clockwise decreases set point

Operating Range	Recommended Set Point
0-15 psi	14 psi

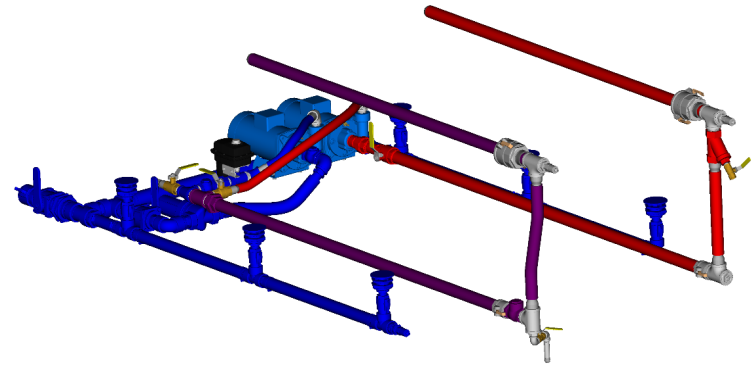


# Water System

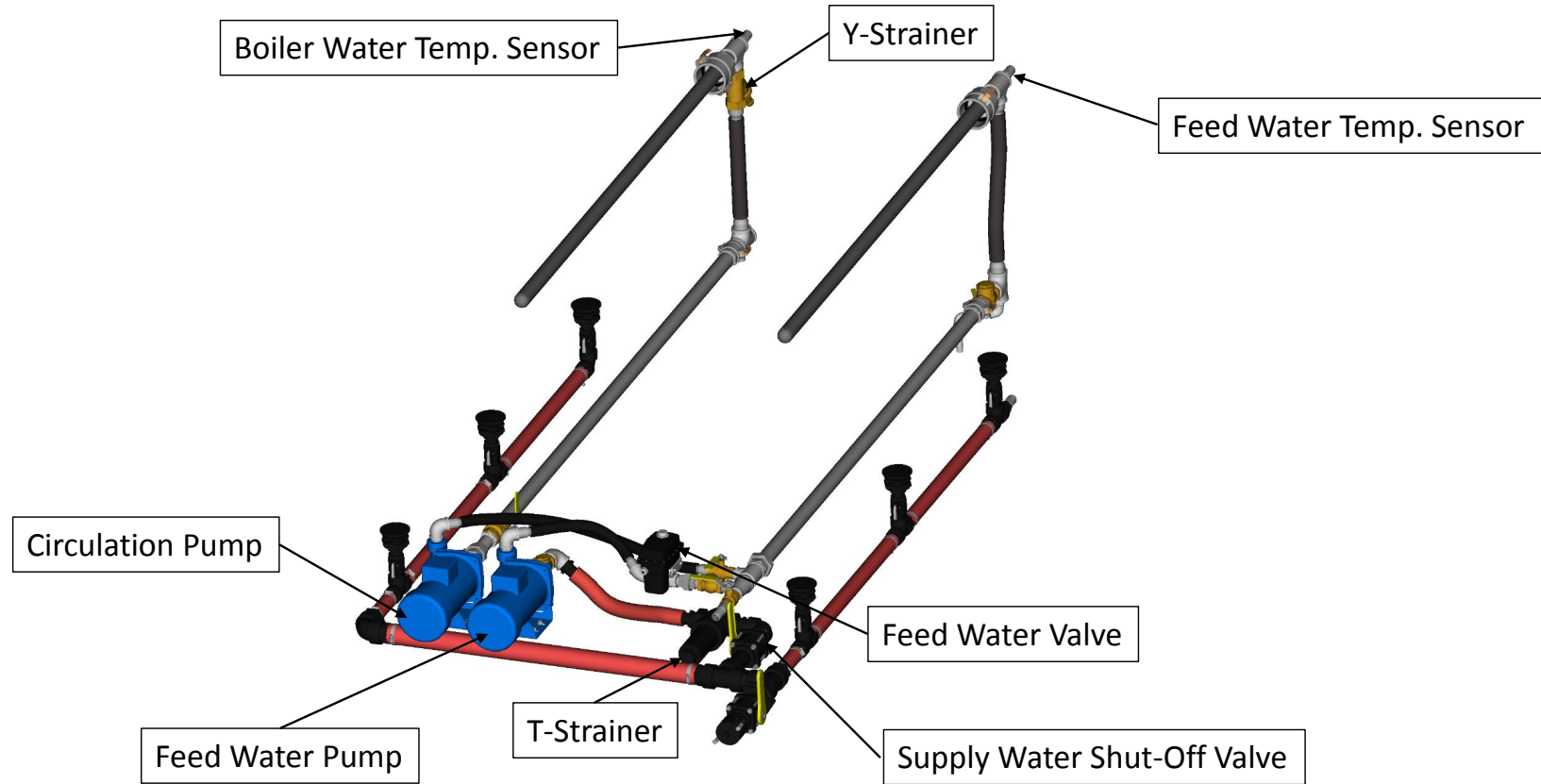
The purpose of the water system is to provide the boiler with water and maintain the proper water level during operation. It is essential for both function and safety that the water inside the boiler is maintained at an appropriate level.

The Water System can be broken down into 4 main parts:

1. Controls and Safeties
2. Supply Water (Blue)
3. Feed Water (Purple)
4. Circulation (Red)



# Water System

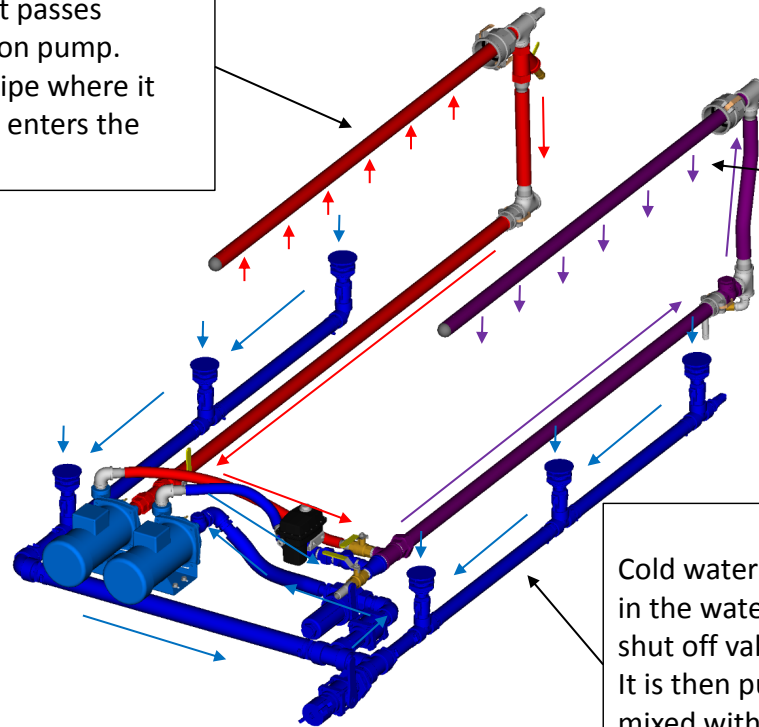




# Water System

## Circulation

Hot water is pulled out of the boiler. It passes through the Y-strainer to the circulation pump. It is then pumped to the feed water pipe where it mixes with the cold supply water as it enters the boiler.



## Feed Water

The warm mixed water from the supply water and circulation water enters the boiler.

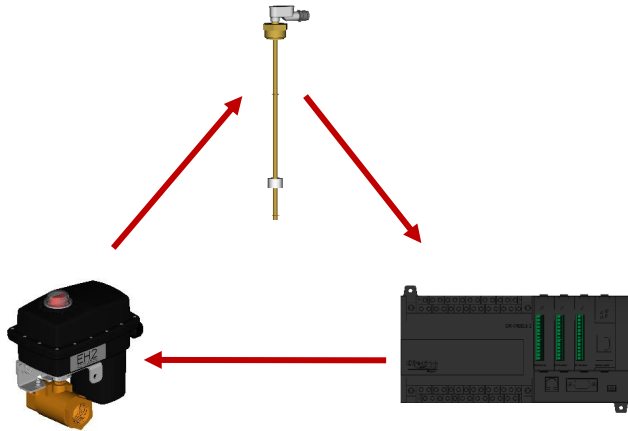
## Supply Water

Cold water is pulled in through the bulk head fittings in the water tanks. It passes through the supply water shut off valve and T-strainer to the feed water pump. It is then pumped through the feed water valve and mixed with the hot circulation water as it enters the boiler.

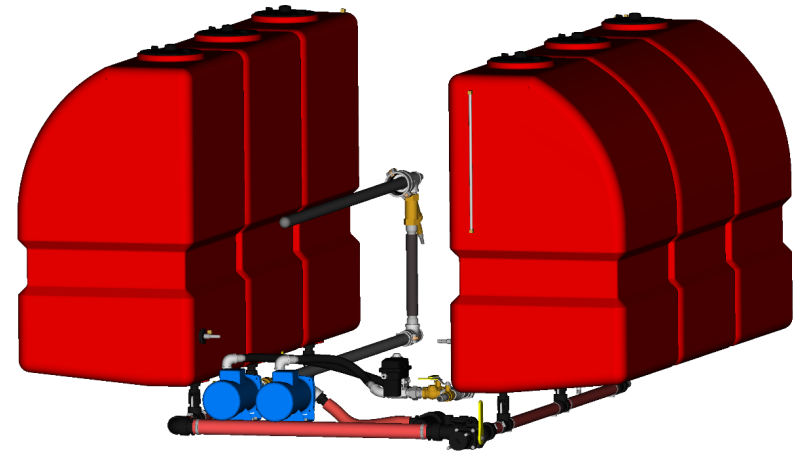
# Water Level Control

There are 2 main factors that will affect the water level in the boiler, the supply water system and the feed water control system. In order for the water level in the boiler to be controlled properly both of these systems must be functioning correctly.

Feed Water Control System

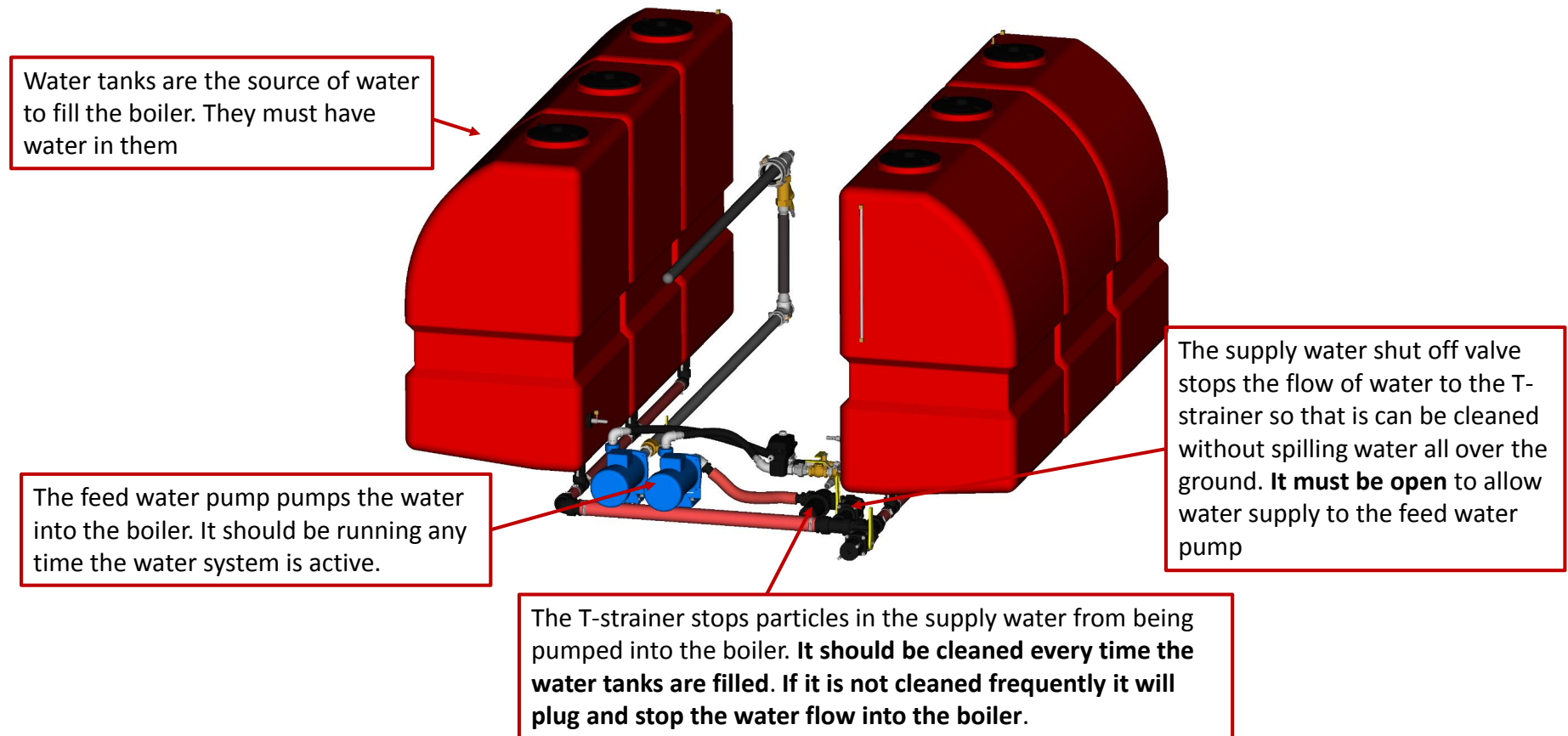


Supply Water System



# Supply Water System

The supply water system contains the water tanks, the supply water shut off valve, the T-strainer and the feed water pump.



# Water Level Control

This consists of three components, the boiler water level sensor, the PLC, and the feed water valve.

The feed water valve opens to allow water to flow into the boiler to raise the water level. When the water has reached the correct level inside the boiler the valve closes to stop the flow of water into the boiler.

The boiler water level sensor measures the level of the water in the boiler and sends a signal to the PLC to indicate what the water level is. The water level in the boiler is measured in inches and should correspond to the level in the sight glass on the upper right side of the boiler.



The PLC is programmed to maintain the boiler water level at a set point (Default 5 in.). When the boiler water level sensor indicates that the water level has dropped below the set point, the PLC tells the feed water valve to open to allow water to flow into the boiler. When the water level reaches the set point the PLC tells the valve to close which stops the flow of water into the boiler.

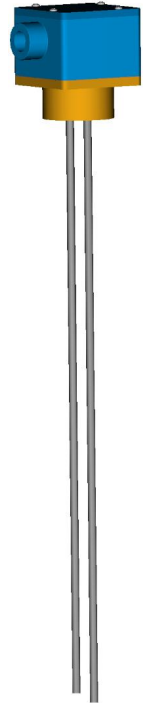
# Water System Safeties

## (Low Water Cut Off)

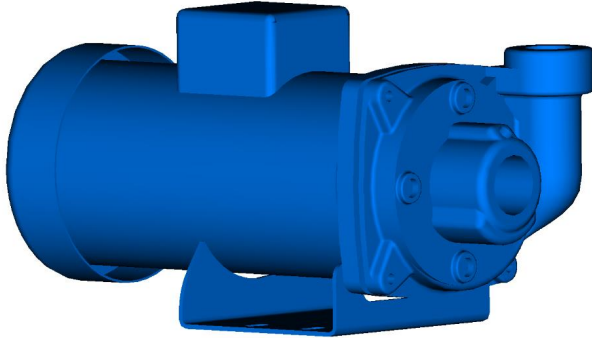


The Low Water Cut Off (LWCO) is a safety device designed to ensure that the water level in the boiler never drops below a safe level during operation. The LWCO consists of two probes. One is slightly longer than the other. Each probe is a totally separate sensor from the other. The tip of the probes sit at the lowest safe level in the boiler. When the water level in the boiler rises enough that it touches the tip of the probe, the LWCO knows that the water is high enough to safely operate. If the water level in the boiler drops so that the water is no longer touching the probe, the LWCO knows that the water is below the safe operating level. **The only function of the LWCO is to shut off the flame if the boiler water level drops below the safe operating level.** It does not have any effect on water level control.

*See "Safety Circuit" for more detail on the Low Water Cut Off.*

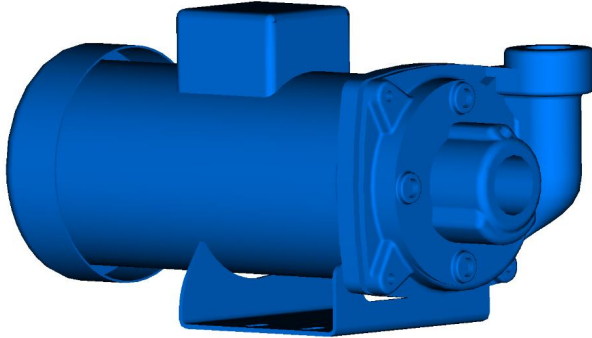


# Feed Water Pump



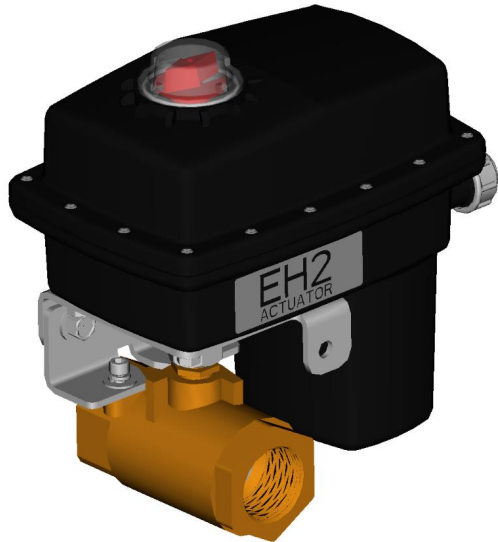
The Feed Water Pump is used to pump the supply water from the water tanks to the boiler. **The Feed Water Pump runs anytime the water system is active.** The flow of water from the Feed Water Pump to the boiler is controlled by the Feed Water Valve (See “Feed Water Valve”).

# Circulation Pump



The Circulation Pump is used to pull hot water out of the boiler and circulate it back through the feed water pipe. **The circulation pump will not run until the water system is active and Low Water 1 is closed (water is above Low Water 1).**

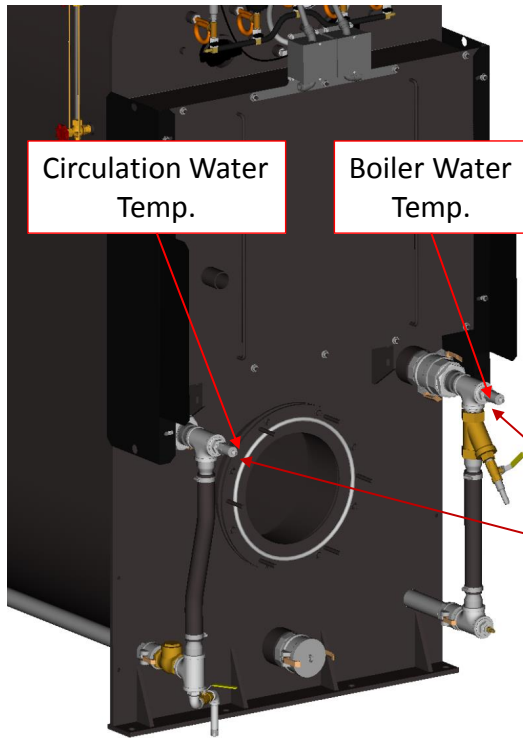
# Feed Water Valve



The Feed Water Valve controls the flow of supply water into the boiler to maintain the proper water level.



# Boiler Water Temp. and Feed Water Temp. Sensors



The Boiler Water and Circulation Water Temp. sensors are both critical for boiler operation. When the boiler is heating up the burner will not go to high fire until the boiler water temp. reaches 180 degrees F. During operation the PLC is always comparing the readings from both sensors.

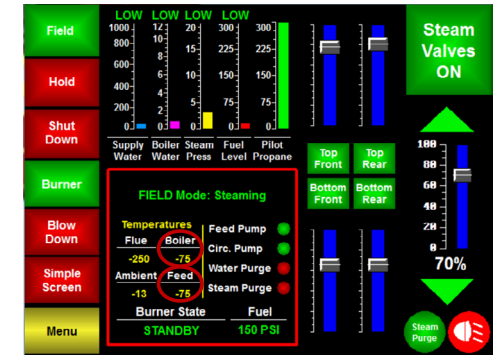
Both sensors are exactly the same and can be interchangeable if needed.



# Boiler Water Temp. and Feed Water Temp. Sensors

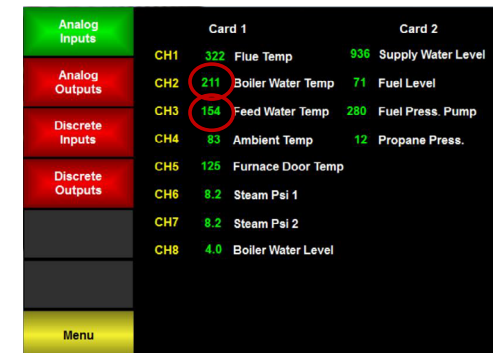
The readings from the Boiler Water Temp. and Feed Water Temp. sensors can be seen on the touch screen controller on the two screens to the right. The feed water will normally be cooler than the boiler water when the Feed Water Valve is open. When the Feed Water Valve is closed the two sensors will normally read very close to the same.

Field Work

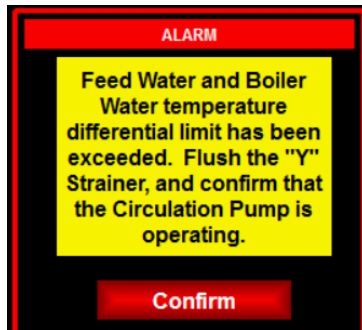


(Menu)→(Diagnostics)→(Inputs/Outputs)  
→(Analog Inputs)

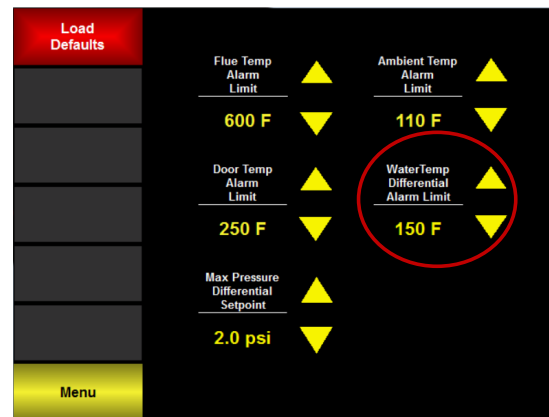
Sensor	Normal Operating Range
Boiler Water	220-250 deg. F
Feed Water	120-250 deg. F
Default temp differential set point = 150 deg. F	



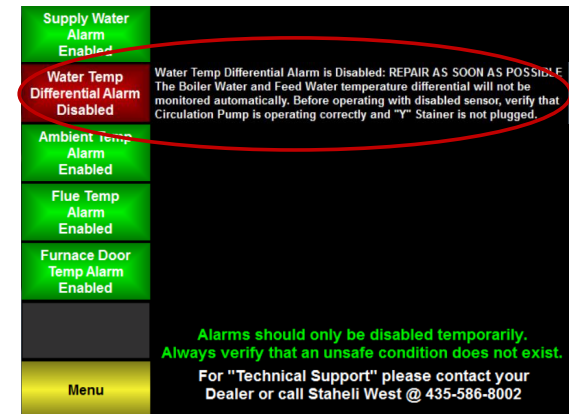
# Boiler Water Temp. and Feed Water Temp. Alarm Settings



If the feed water is too much cooler than the boiler water, (150 deg. F) it indicates a failure in the circulation system and gives an alarm to the operator.



The temperature differential set point can be adjusted by going to (Menu)→(Settings)→(Alarm Settings) on the touch screen controller and adjusting the set point here.



The temperature differential alarm can be disabled by going to (Menu)→(Settings)→(Alarm Status) on the touch screen controller and disable alarm here. **Make sure to read warning to the right when disabling alarm.**

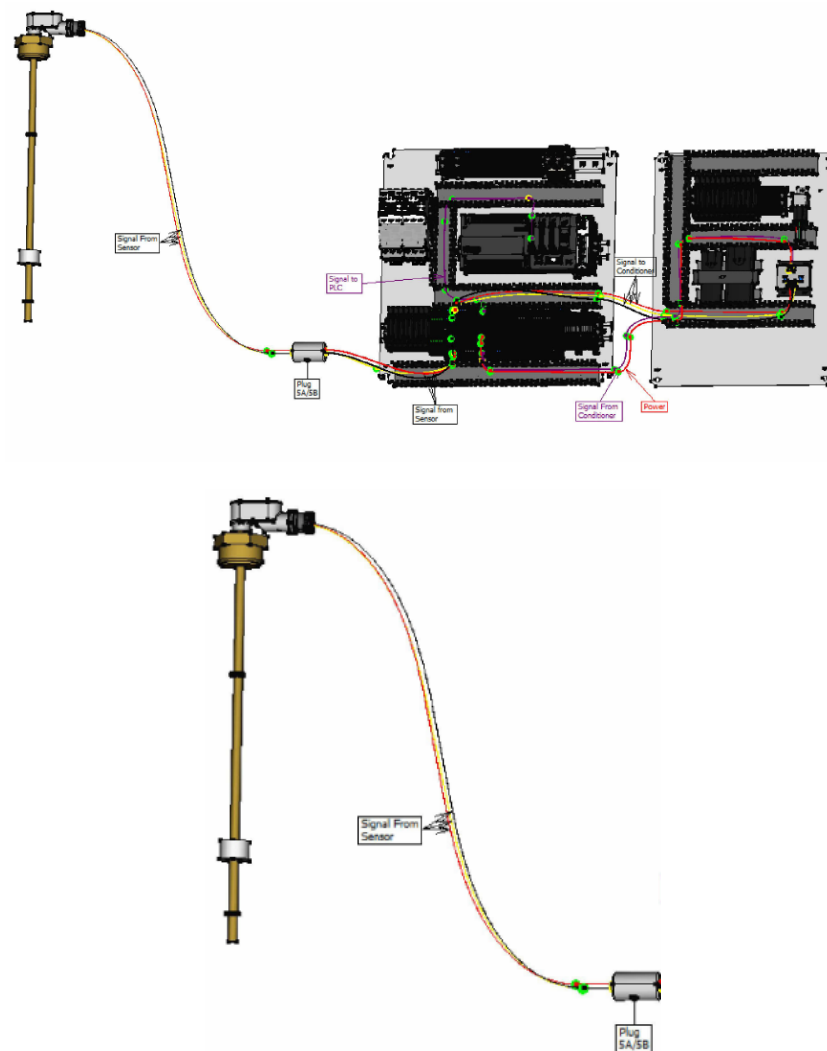


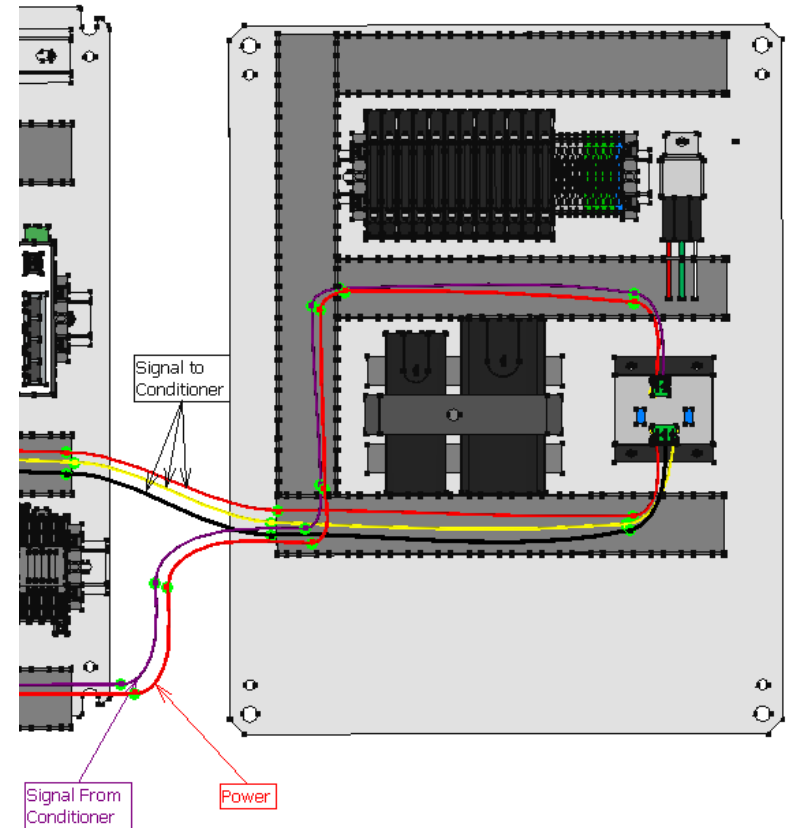
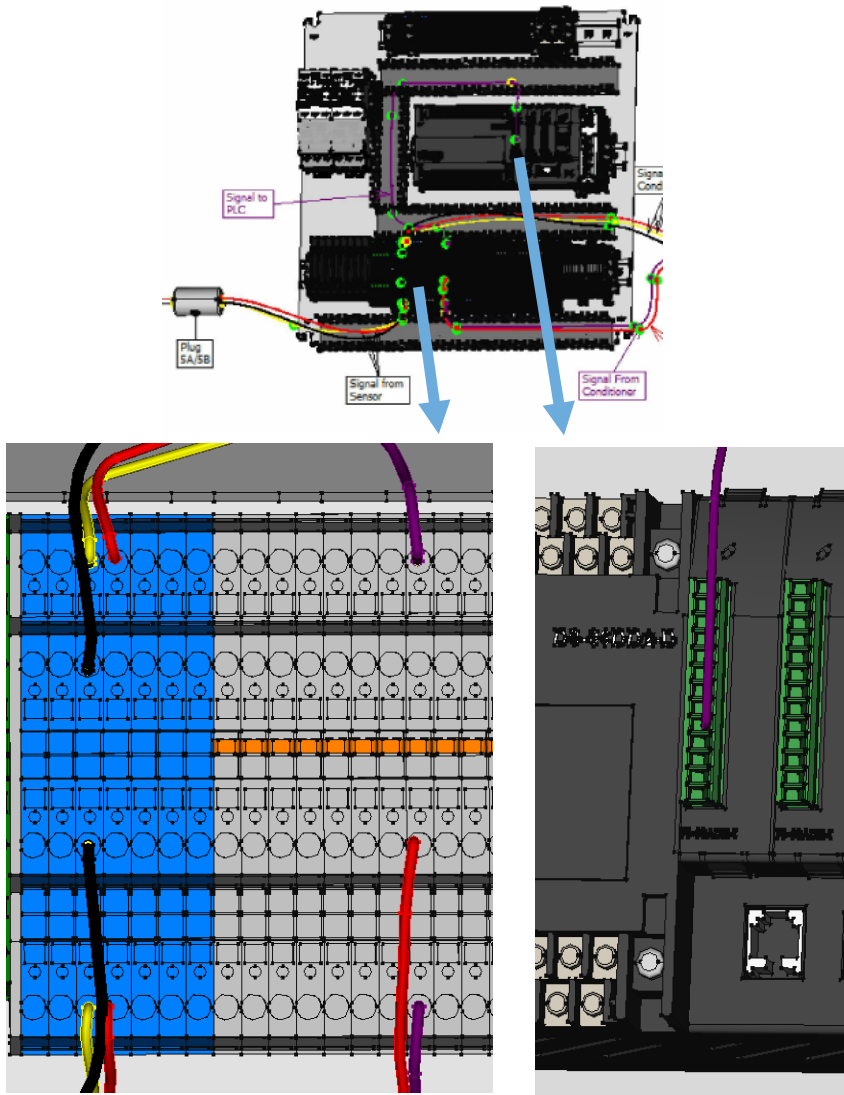
# Boiler Water Level Sensor



# DewPoint 6210

Electrical path of the Boiler Water Level Sensor:



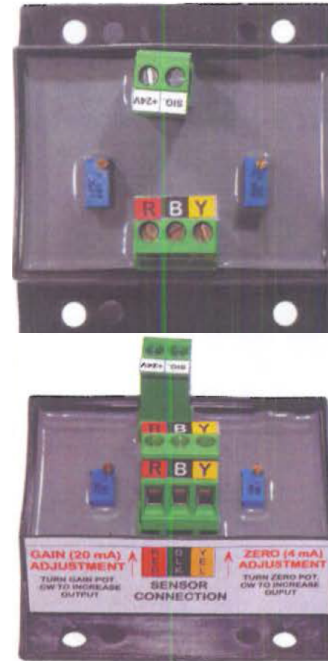


## 4-20 mA VRO Trouble Shooting

Test individual components of system to isolate problem.

1. Test Sensor Output
  - a. Turn off power
  - b. Disconnect sensor wires from signal conditioner.
  - c. Sensor is now a potentiometer with the
    - i. Black wire being the wiper and
    - ii. Red & Yellow wires the ends of the potentiometer.
  - d. With an ohmmeter connect between Red & Black wires. The closer the float is to full the higher the resistance typically 500 to 750 ohms. Move the float toward the empty end of the sensor and the resistance will decrease.
  - e. With an ohmmeter connect between Black & Yellow wires. The closer the float is to full the lower the resistance typically will be less than 100 ohms. Move the float toward the empty end of the sensor and the resistance will increase.
  - f. With an ohmmeter connect between Red & Yellow wires the resistance will not change with float movement. The resistance will be 600-750 ohms.
  - g. The resistance tests above must never be above 900 ohms.
  - h. If the sensor output changes as described above the sensor is good.
  - i. Reconnect sensor wires to signal conditioner.
2. Test Signal Conditioner
  - a. Turn off power.
  - b. Disconnect any wires from the two position terminal block.
  - c. Measure the incoming power voltage this must be 10-28 VDC.
  - d. With an amp meter set to measure milliamps DC.
    - i. Connect a 250 ohm resistor to the signal terminal on the signal conditioner.
    - ii. Connect meter positive lead to loose end of 250 ohm resistor.
    - iii. Connect meter negative lead to power supply GROUND.
    - iv. Connect power to plus terminal on the signal conditioner terminal block.
  - e. If the float on the sensor cannot be moved (i.e. remote location or installed in tank), verify signal conditioner output is between 4-20 mA.
  - f. If the float on the sensor can be moved, slide the float to the empty position and verify 4 mA output.
  - g. Adjust zero pot. on signal conditioner if required to get 4 mA when float is at empty position.
  - h. Next slide the float to the full position and verify 20 mA output.
  - i. Adjust gain pot. on signal conditioner if required to get 20 mA when float is at the full point.
  - j. Finally slowly move the float up and down the full length of the stem, watching the meter for abnormal output readings.
  - k. Now the sensor and signal conditioner test good. Any errors in readings when connected in your application may be the result of:
    - i. How the signal conditioner wires are routed
    - ii. Grounding of sensor and tank
    - iii. Or other application & installation issues.

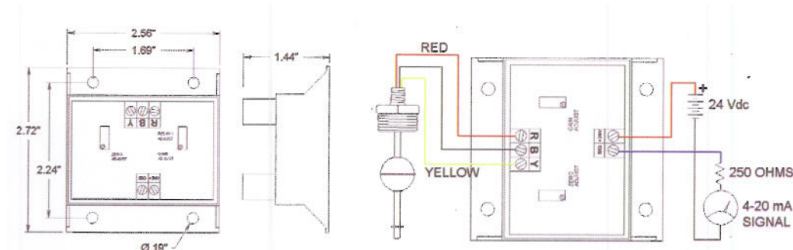
## Signal Conditioners Continuous Output Sensor to 4-20 mA



### 4-20 mA Output Loop Powered:

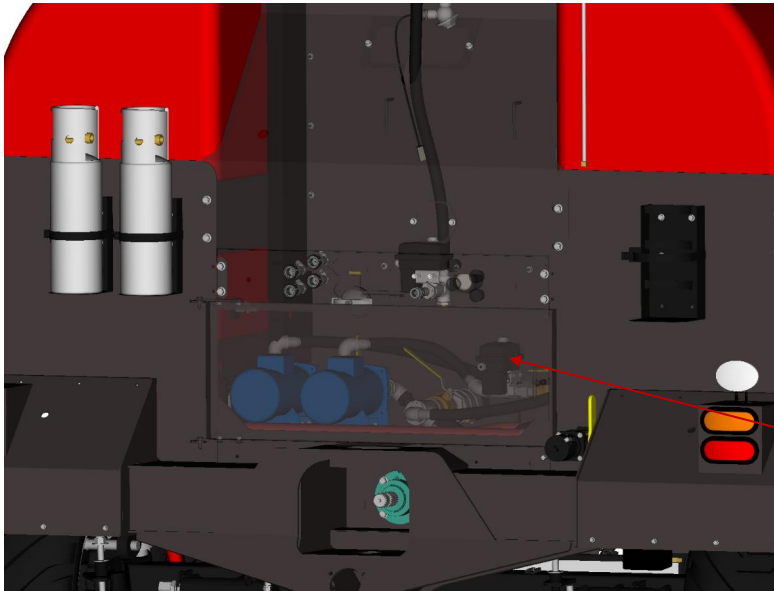
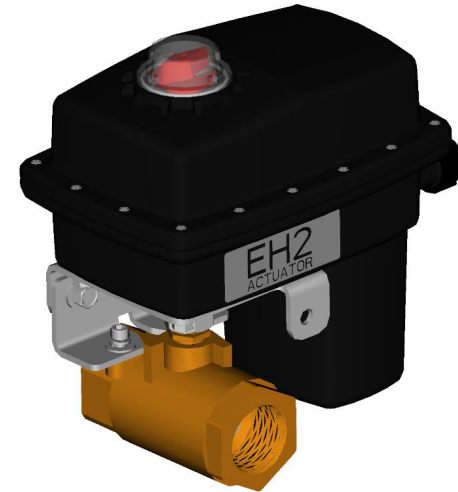
- 24 Vdc powered from loop
- Adjustable Zero, 4 ma output by 25 turn sealed pot.
- Adjustable Gain, 20 ma output by 25 turn sealed pot.
- Two piece terminal blocks, plug-in for easy wiring
- Load resistor typically 250 ohms
- Epoxy sealed electronics for industrial applications
- Reverse polarity protected
- Voltage spike and surge protected

Ordering Information: Part number: SCL-BM0BB



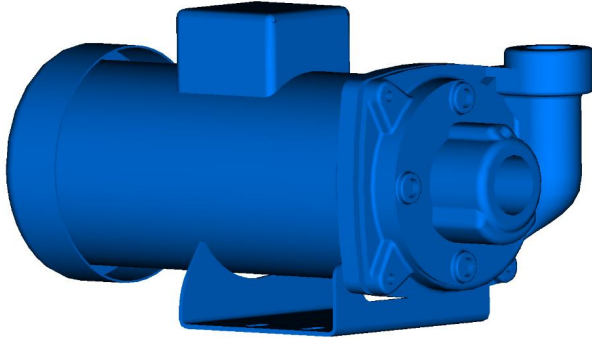
# Feed Water Valve

The Feed Water Valve controls the flow of supply water into the boiler to maintain the proper water level (See “Water Level Control” for more detail). The valve is a 1 in. STD port brass ball valve. It is driven by an EH2 4-20 mA actuator.



The Feed Water Valve is located inside the back door here.

# Feed Water Pump

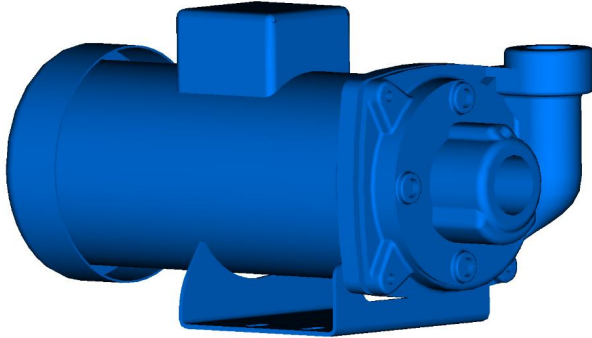


The Feed Water Pump is used to pump the supply water from the water tanks to the boiler. The Feed Water Pump runs anytime the water system is active. The flow of water from the Feed Water Pump to the boiler is controlled by the Feed Water Valve (See “Feed Water Valve”).

This pump requires little or no service other than reasonable care and periodic cleaning. Occasionally, however, a shaft seal may become damaged and must be replaced. The procedure as outlined on the next page will enable you to replace the seal.



# Circulation Pump



The Circulation Pump is used to pull hot water out of the boiler and circulate it back through the feed water pipe. The circulation pump runs any time the water system is active and Low Water 1 is closed (water is above Low Water 1).

This pump requires little or no service other than reasonable care and periodic cleaning. Occasionally, however, a shaft seal may become damaged and must be replaced. The procedure as outlined on the next page will enable you to replace the seal.

# Pump Service

**NOTICE:** The highly polished and lapped faces of this seal are easily damaged. Read instructions and handle the seal with care. Some models are equipped with an impeller screw, which has a left hand thread. Before unscrewing the impeller, remove the impeller screw.

## **REMOVAL OF OLD SEAL**

1. After unscrewing impeller, carefully remove rotating part of seal by prying up on sealing washer, using two screw - drivers (see Figure 5A). Use care not to scratch motor shaft.
2. Remove seal plate from motor and place on flat surface, face down. Use a screwdriver to push ceramic seat out from seal cavity (see Figure 5B).

## **INSTALLATION OF FLOATING SEAT (Figure 5C)**

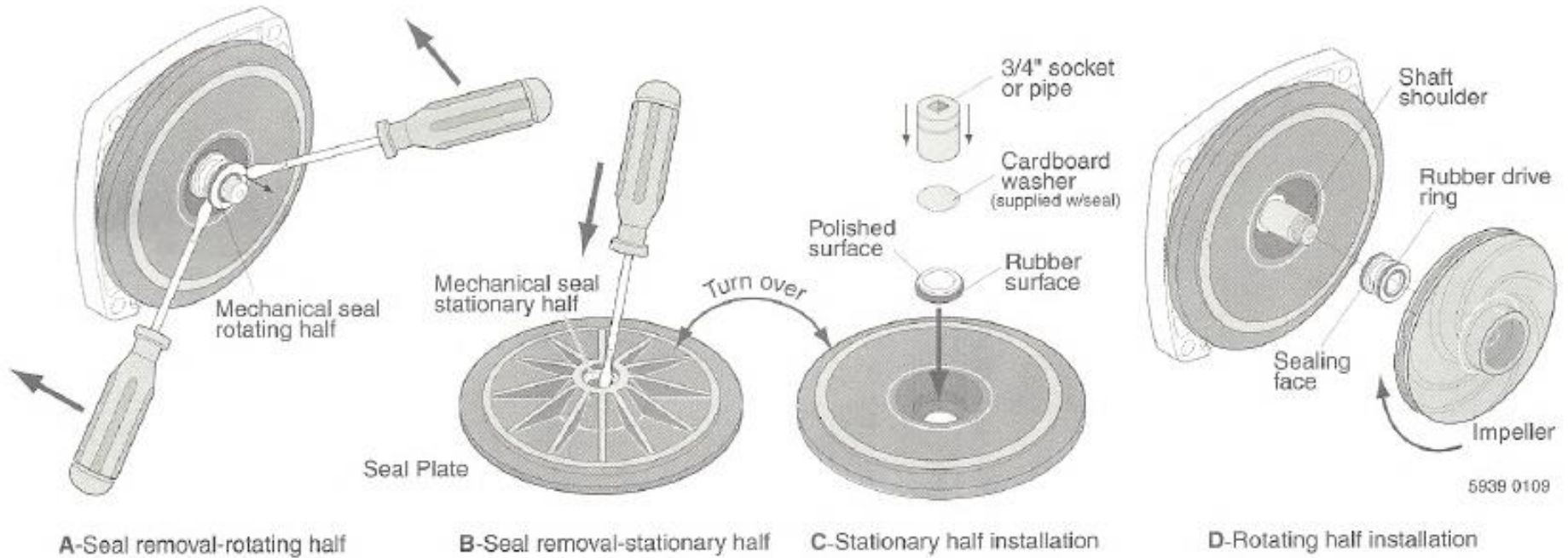
1. Clean polished surface of floating seat with clean cloth.
2. Turn seal plate over so seal cavity is up, clean cavity thoroughly.
3. Lubricate outside rubber surface of ceramic seat with soapy water and press firmly into seal cavity with finger pressure. If seat will not locate properly in this manner, place cardboard washer over polished face of seat and press into seal cavity using a 3/4" socket or 3/4" piece of standard pipe.

4. DISPOSE OF CARDBOARD WASHER. Be sure polished surface of seat is free of dirt and has not been damaged by insertion. Remove excess soapy water.

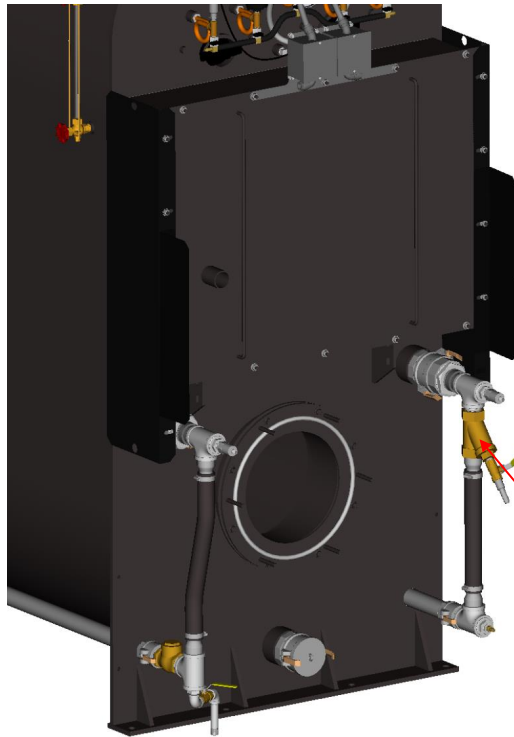
## **INSTALLATION OF ROTATING PART OF SEAL UNIT (Figure 5D)**

1. Reinstall seal plate using extreme caution not to hit ceramic portion of seal on motor shaft.
2. Inspect shaft to make sure that it is clean.
3. Clean face of sealing washer with clean cloth.
4. Lubricate inside diameter and outer face of rubber drive ring with soapy water and slide assembly on motor shaft (sealing face first) until rubber drive ring hits shaft shoulder.
5. Screw impeller on shaft until impeller hub hits shaft shoulder. This will automatically locate seal in place and move the sealing washer face up against seat facing. Reinstall impeller screw (if used).

# Pump Service



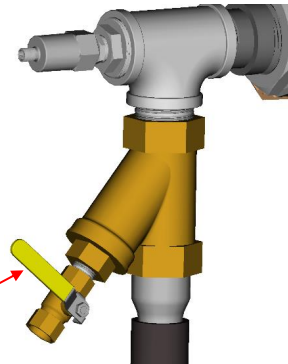
# Y-Strainer



Y-Strainer

The Y-strainer will catch any large particles as the boiler water is pulled out and recirculated. **The Y-strainer should be flushed at the end of each day by opening the hand valve on the front for several seconds.** If the Y-strainer is not flushed often it will cause malfunction of the circulation system.

If the screen inside the Y-strainer becomes damaged or permanently plugged, the screen can be easily replaced.

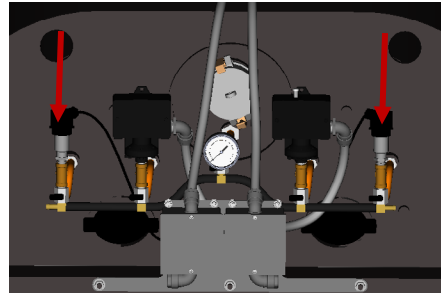


Flush

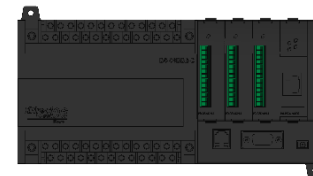
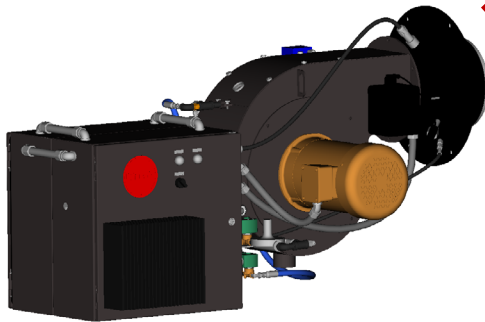
# Steam Pressure Control

This system consists of three components, the Steam Pressure Transducers, the PLC and the Burner.

The Burner provides the fire which increases the pressure inside the boiler. The burner alternates between Low Fire, High Fire and Off depending on the steam pressure demand.

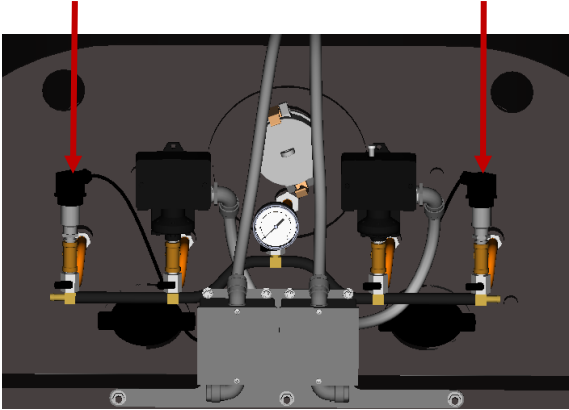


The two pressure transducers sense the pressure inside the boiler and send that information to the PLC.

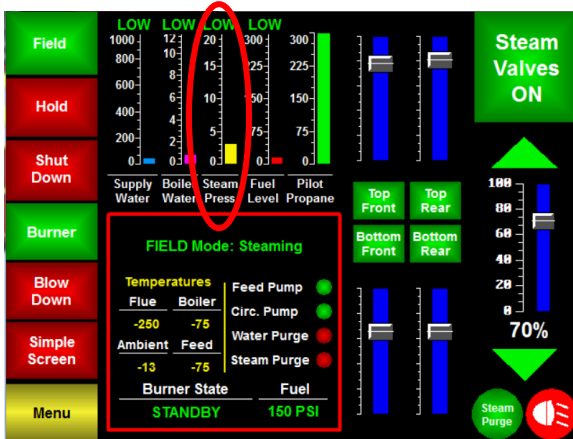


The PLC receives the signal from the Steam Pressure Transducers and switches the burner between Low Fire, High Fire and Off to maintain the correct steam pressure.

# Steam Pressure Control Logic

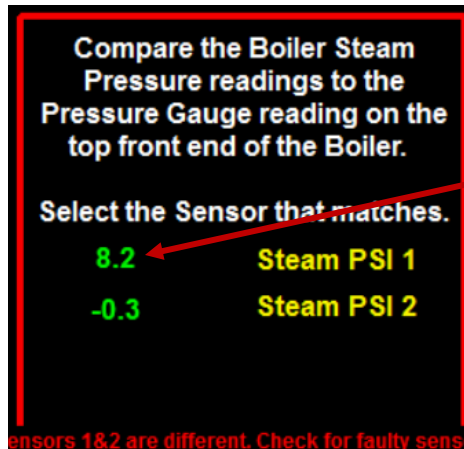


Because steam pressure is such a critical measurement, the two Steam Pressure Transducers both measure the steam pressure inside the boiler. The PLC compares the readings from each sensor and calculates the average for the actual steam pressure reading.



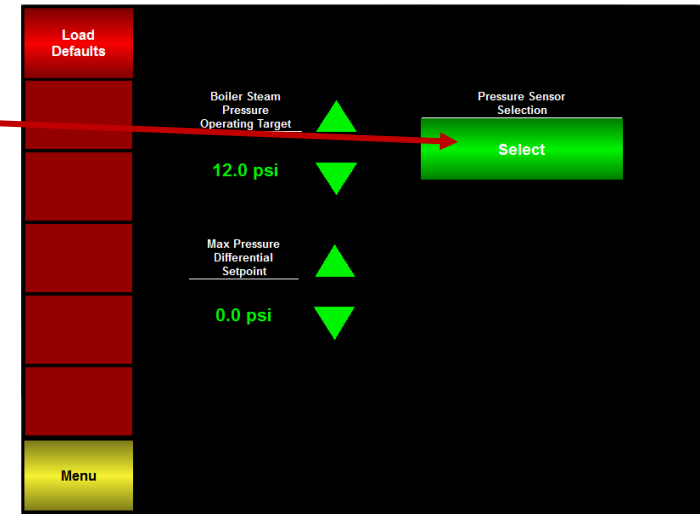
The steam pressure reading from the pressure transducers is displayed here on the field work screen.

# Steam Pressure Control Logic



If the readings from the two pressure transducers are ever more than 2 psi different from each other, an error message will appear that will require the operator to select which transducer matches the reading on the mechanical gauge. The selection can be made by selecting the sensor that matches, directly from the error message...

or by going to Menu→Settings→Boiler Pressure→Pressure Sensor Selection→ and select the matching sensor.



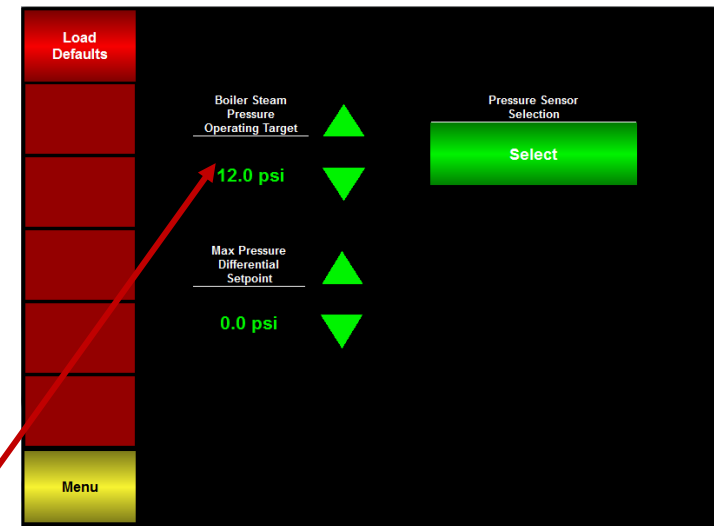
The DewPoint may be operated on one sensor for a short period of time until the bad sensor can be replaced. All pressure safety devices will still function normally. However, to ensure accurate steam pressure control **the DewPoint should never be operated for an extended time with one Steam Pressure Transducer.**

# Steam Pressure Control Logic

The PLC automatically adjusts the flame between Low Fire, High Fire and Off to keep the steam pressure within 1 psi of the “Boiler Steam Pressure Operating Target.” The logic for this is:

- **High Fire:** When steam pressure is more than 1 psi below the Operating Target and the boiler water is more than 180 deg., the Burner goes to “High Fire”
- **Low Fire:** When steam pressure is within 1 psi (+ or -) and/or the boiler water is below 180 degrees of the Operating Target, the Burner goes to “Low Fire”
- **Off:** When the steam pressure is more than 1 psi greater than the Operating Target, the burner goes to off.

The “Boiler Steam Pressure Operating Target” can be found by going to Menu→Settings→Boiler Pressure.





# Actuators



**EH2 4-20 mA**

The EH2 4-20 mA actuator is used in several locations on the machine. It receives an analog signal from the PLC which can range from Closed to 100% open and anywhere in between. It has a four pin plug and a red position indicator. It can be interchanged with any actuator that has the same plug



**EH2 On/Off**

The EH2 On/Off actuator is used on the steam purge valve. It receives a discrete signal from the PLC which tells the actuator to open or close completely. It has a three pin plug and a yellow position indicator. It can be interchanged with any actuator that has the same plug.



**EH3 4-20 mA with  
Position Switches**

The EH3 4-20 mA actuator with position switches is a very specialized actuator that is used to control the airflow to the burner. It receives an analog signal from the PLC which can range from Closed to 100% open and anywhere in between. It has an eight pin plug and a red position indicator. (For more detail see "Louver Actuator")

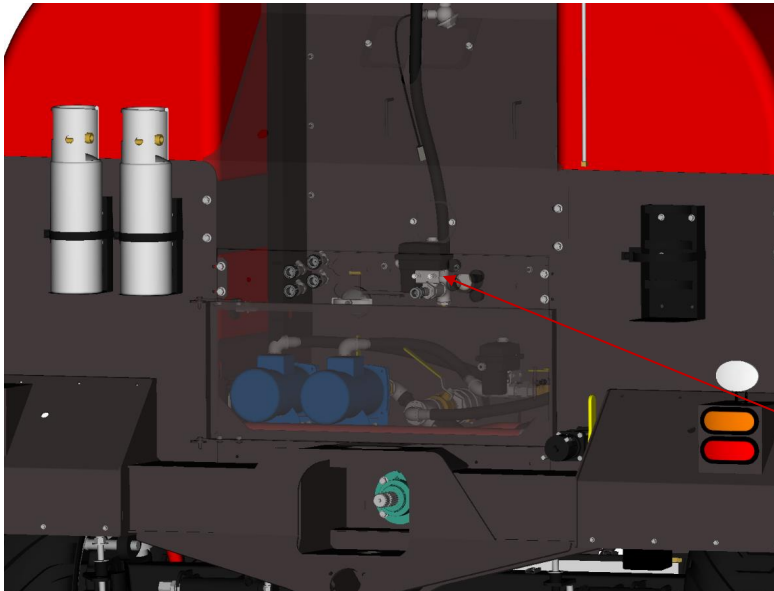
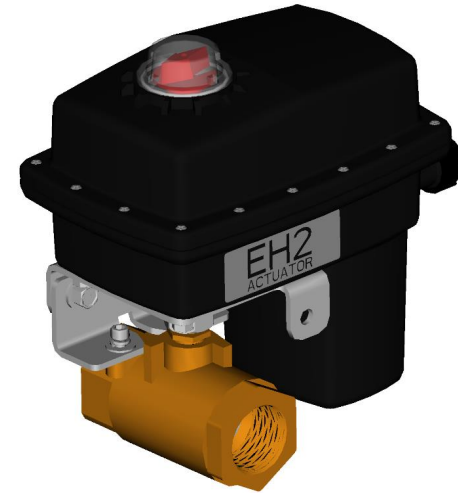


**EH3 On/Off**

The EH3 On/Off actuator is used on the manifold drain valve. It receives a discrete signal from the PLC which tells the actuator to open or close completely. It has a three pin plug and a yellow position indicator. It can be interchanged with any actuator that has the same plug.

# Blow Down Valve

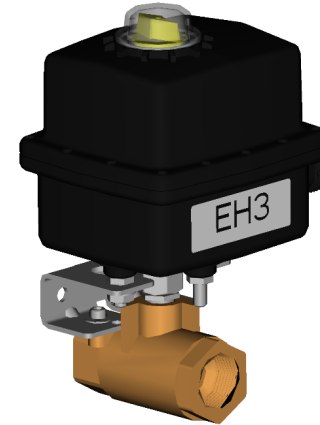
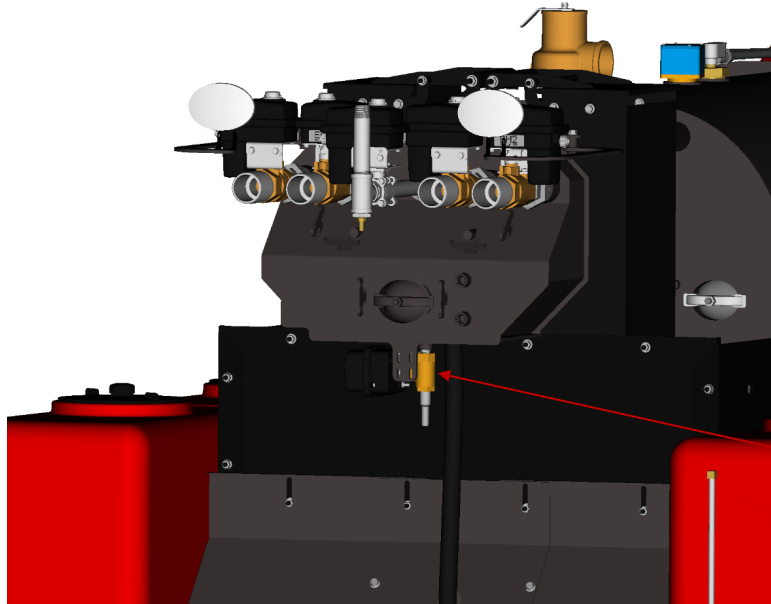
The Blow Down Valve opens to let concentrated water out of the boiler to maintain good water quality inside the boiler (See “Automatic Blow Down System” for more detail). The valve is a 1 in. STD port brass ball valve. It is driven by an EH2 4-20 mA actuator.



The Blow Down Valve is located inside the back door here.

# Manifold Drain Valve

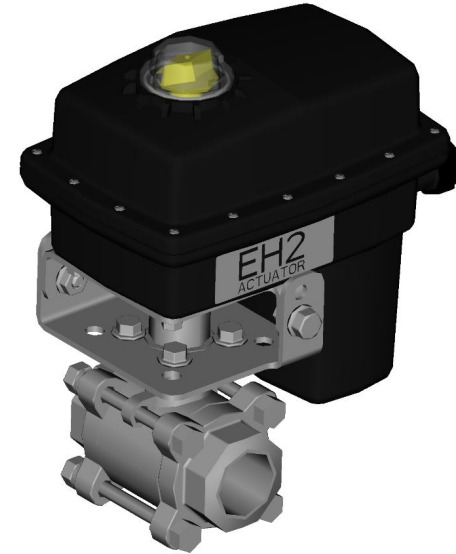
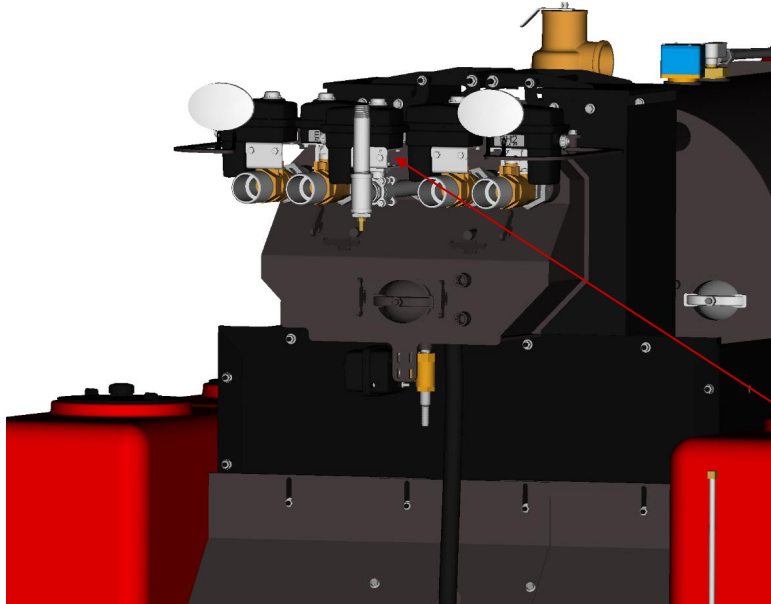
The Manifold Drain Valve opens to drain any water that has accumulated in the bottom of the steam manifold. It normally opens for 30 seconds and closes for 30 seconds. The open time can be changed in settings. The valve is a 0.5 in. standard port brass ball valve. It is driven by an EH3 On/Off actuator.



The Manifold Drain Valve is located on the bottom of the steam manifold here.

# Steam Purge Valve

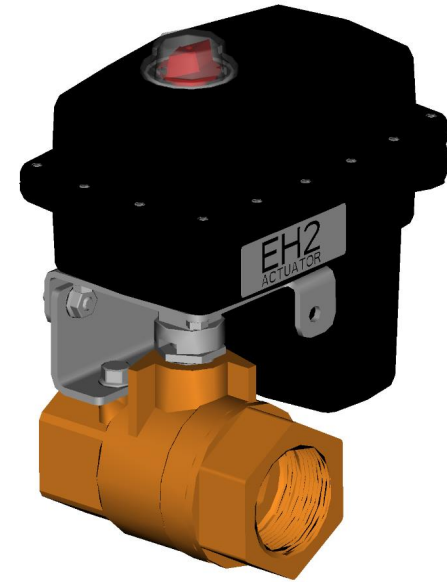
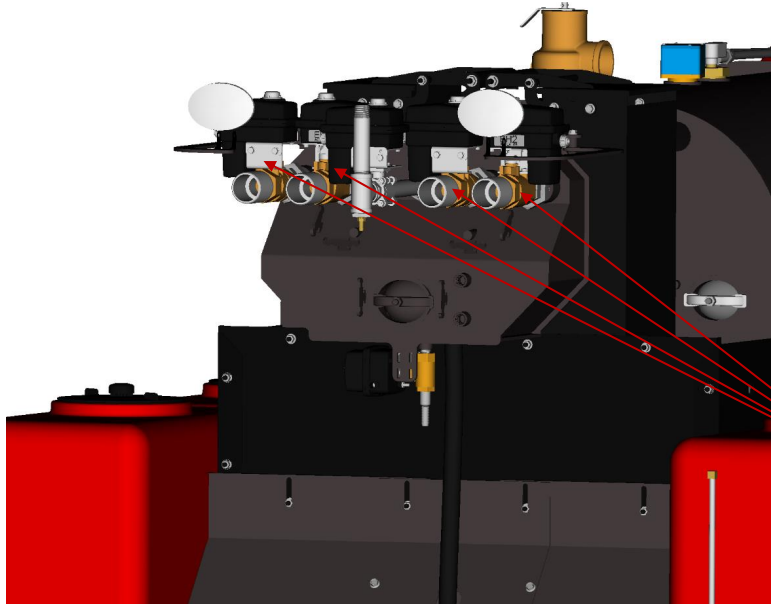
The Purpose of the steam purge valve is to keep the steam pressure low enough that the burner will not shut off when turning around or using low steam rates. This prevents big drops in steam pressure because of the burner shutting off during operation. The steam purge valve uses a 1 in. full port valve with an EH2 On/Off actuator.



The steam purge valve is located in the middle of the steam manifold.

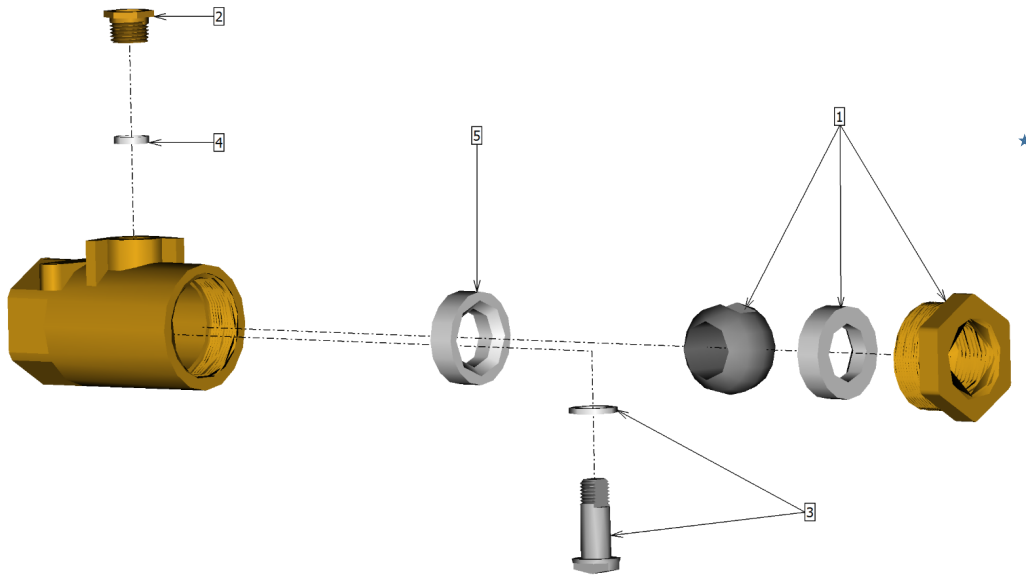
# Steam Valve

The steam valves control the steam rate to the corresponding steam manifold in the baler. They are a 1.5 in. standard port brass ball valve with an EH2 4-20 mA actuator.



The steam purge valve is located in the middle of the steam manifold.

# Valve Repair



- ❖ Before you begin turn the valve to the fully closed position
- ❖ Be careful not to damage the surfaces on the valve where the seats will need to seal.
- 1. Remove the retainer nut from the end of the valve and remove the outer seat and the ball. (the ball must be in the closed position before it can be removed)
- 2. Remove the retainer nut on the stud at the top of the valve.
- 3. Remove the stud and the inner seal by pressing the stud down into the valve and out the end.
- 4. Remove the outer seal
- 5. Remove the inner seat
- ❖ To re-assemble do these steps in reverse with the new parts.

# DewPoint 6210 Start-Up Timeline

- 1 Generator Starts and Runs
- 2 Feed Water Pump Turns On and Runs
- 3 Feed Water Actuator Opens and lets water into the Boiler until Boiler reaches operating level
- 4 Burner Control Power comes on automatically (unless manually shut off)
- 5 Low Water Cut Off Probe #2 makes contact with Boiler Water
- 6 Low Water Cut Off Probe #1 makes contact with Boiler Water and satisfies Both LWCO safeties at this time
- 7 Circulation Pump Turns On
- 8 Burner Controller checks for overpressure (over 15 existing Boiler PSI) in the boiler by Checking the "High Pressure Limit" sensor
- 9 Burner Controller checks for overpressure (over 14.5 existing Boiler PSI) in the boiler by Checking the "Operating Pressure Control" sensor
- 10 System Waits for the "Burner Relay" to be initiated (done automatically during a "Start All" or done manually if system was started using "Start Fill")
- 11 Burner Relay is active (After the Target Boiler Water level is satisfied the program sequence to the next step)
- 12 Burner Initiate (Checks that Voltage and Frequency tolerances are met)
- 13 Burner Standby (Checks that all safeties are in their correct state)
- 14 Fan VFD turns On and begins to spin the Fan
- 15 Pre-purge (Power is sent to the Fan Motor and the Air Louver opens to 100%)
- 16 Air Flow Switch must confirm the Fan started and air is moving through the Burner
- 17 Purge goes for 30 seconds
- 18 Burner Louver goes completely closed at the end of the 30 second Purge cycle
- 19 Propane solenoid opens and the Ignition Transformer sparks for 10 seconds
- 20 Pilot Flame is sensed with the IR Flame Detector
- 21 Main Fuel Valve #1 and the Safety fuel valve (Main Valve #2) open to start Main Oil Ignition
- 22 Main flame is verified using the IR flame sensor
- 23 Burner advances to Low Fire
- 24 Burner heats the Boiler Water on Low Fire until the Boiler Water reaches 180 degrees F
- 25 Burner goes to High Fire after the Boiler Water Temp gets above 180 degrees F
- 26 Burner stays on High Fire until the target pressure is reached (Default 12 PSI)
- 27 Steam Purge Valve opens for 30 seconds to purge oxygen
- 28 Screen changes from the "Systems Start" to "Liability Release"
- 29 When the Liability is "agreed" the screen changes to "Field Work"
- 30 DewPoint 6210 is ready to Steam!

# DewPoint 6110 Burner Sequence Table

BURNER STATE	INITIATE	STANDBY	SAFETY START	PURGE HOLD T19 HI FIRE SWITCH	30 SECOND PURGE	PURGE HOLD T18 LOW FIRE SWITCH	PROPANE PILOT IGNITION	MAIN OIL IGNITION	RUN: LOW FIRE (HEATING BOILER ON LOW TO 180F)	RUN: LOW FIRE/HIGH FIRE (CONTROLLED BY STEAM PRESSURE/DEMAND)	15 SECOND POSTPURGE	STANDBY	BURNER ALARM
HONEYWELL LED DISPLAY	Power	Power	Power	Power	Power	Power	Power	Power	Power	Power	Power	Power	Power
	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot
	Flame	Flame	Flame	Flame	Flame	Flame	Flame	Flame	Flame	Flame	Flame	Flame	Flame
	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main
	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm
BURNER SYSTEM													
VFD - VARIABLE FREQUENCY DRIVE			STARTS	ON									
BURNER COMBUSTION FAN MOTOR			STARTS	ON									
COMBUSTION AIR LOUVER ELECT. ACTUATOR	LOW		6 sec TO HIGH		HIGH	6 sec TO LOW	LOW					LOW	
COMBUSTION AIR LOUVER OIL ACTUATOR								LOW		HIGH - LOW - HIGH: BY STEAM PSI	LOW		
HI FIRE (LOUVER OPEN) SWITCH				ON WHEN HIGH	ON								
LO FIRE (LOUVER CLOSED) SWITCH						ON WHEN LOW	ON						
PILOT IGNITION TRANSFORMER							ON FOR 10 sec THEN 10 sec						
PILOT GAS VALVE							ON FOR 10 sec THEN 10 sec						
OIL SHUTOFF SAFETY VALVE								ON FOR 15 sec	ON THROUGHOUT "RUN" STATE				
MAIN OIL VALVE								ON FOR 15 sec	ON THROUGHOUT "RUN" STATE				
LOW FIRE BYPASS OIL VALVE								ON	ON	OFF - ON - OFF: BY STEAM PSI			
HIGH FIRE 3-WAY OIL VALVE										ON - OFF - ON: BY STEAM PSI			
FLAME SIGNAL DETECTOR			SAFE START CHECK TO BE SURE THERE IS NO FLAME					CHECK TO PROVE FLAME					
PRIMARY SAFETY SYSTEM													
BURNER SWITCH (MANUAL)	MUST BE ON												
LOW WATER CUT-OFF 1		MAY BE ON	MUST BE ON										
LOW WATER CUT-OFF 2		MAY BE ON	MUST BE ON										
HIGH PRESS LIMIT CONTROL		MAY BE ON	MUST BE ON										
OPERATING PRESS CONTROL		MAY BE ON	MUST BE ON										
BURNER RELAY			MUST BE ON										
CR-1 CONTROL RELAY VFD			MUST BE ON										
CR-2 CONTROL RELAY VFD			MUST BE ON										
BLOWER AIR PRESS SWITCH				MUST BE ON									
PLC CONTROLS													
BURNER ON/OFF CONTROL													
DY7 BURNER RELAY			ON - BY PLC "DY7" CONTROL WHEN BURNER IS ACTIVATED FROM SCREEN OR BY "START ALL" FUNCTION										
SR RELAY ANNUNCIATION TO PLC													
SR-1 BURNER SWITCH (MANUAL)	"ON" ANUNCIATION												
SR-2 LOW WATER CUT-OFF 1		"ON" ANUNCIATION											
SR-3 LOW WATER CUT-OFF 2		"ON" ANUNCIATION											
SR-4 HIGH PRESS LIMIT CONTROL		"ON" ANUNCIATION											
SR-5 OPERATING PRESS CONTROL		"ON" ANUNCIATION											
SR-6 BURNER RELAY			"ON" ANUNCIATION										
SR-7 CR-1 CONTROL RELAY VFD			"ON" ANUNCIATION										
SR-7 CR-2 CONTROL RELAY VFD			"ON" ANUNCIATION										
SR-8 BLOWER AIR PRESS SWITCH				"ON" ANUNCIATION									
STEAM PSI & FLAME MANAGEMENT													
BOILER WATER TEMP SENSOR	CONSTANT TEMP READING BUT N/A HERE								LOW HOLD BELOW 180F	PSI CONTROL ABOVE 180F	CONSTANT TEMP READING BUT N/A HERE		
STEAM PSI 1 SENSOR	CONSTANT PSI READING ALWAYS COMPARES TO "STEAM PSI 2 SENSOR" FOR SAFETY REDUNDANCY												
AVERAGE OF STEAM PSI 1 & 2 SENSORS	PSI N/A HERE		PSI HERE MUST BE AT LEAST 0.5 PSI BELOW STEAM PSI TARGET TO START BURNER AND OPERATE THROUGH WARM-UP PERIOD						HI WHEN > 0.5 PSI BELOW TARGET LO WHEN > 0.5 PSI ABOVE TARGET		OFF WHEN > 1 PSI ABOVE STEAM PSI TARGET		
STEAM PSI 2 SENSOR	CONSTANT PSI READING ALWAYS COMPARES TO "STEAM PSI 1 SENSOR" FOR SAFETY REDUNDANCY												
HIGH FIRE RELAY									ON - OFF - ON: BY STEAM PSI				



# DewPoint 6210 Burner Sequence Table

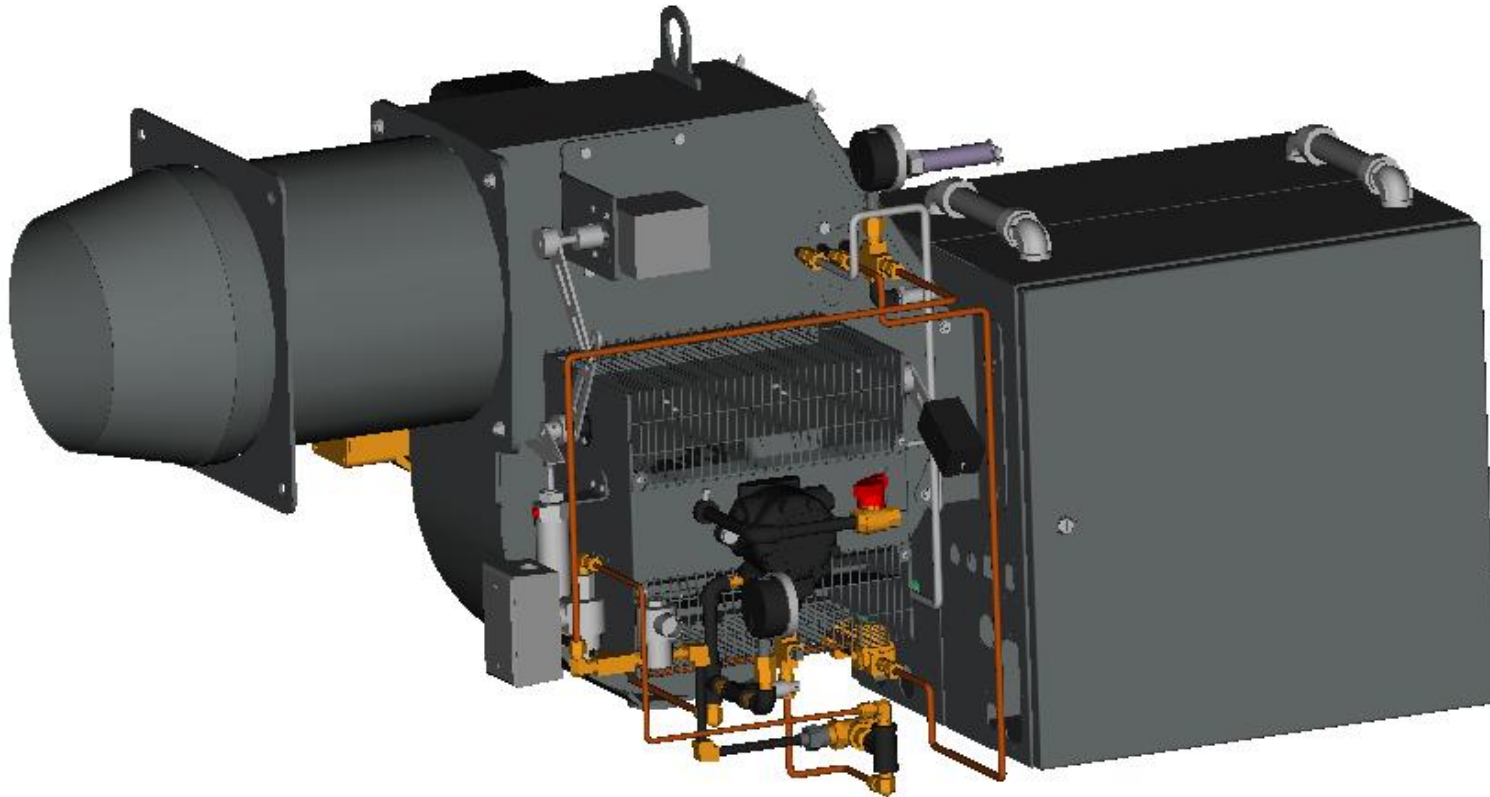
BURNER STATE	INITIATE	STANDBY	SAFETY START	PURGE HOLD T19 HI FIRE SWITCH	30 SECOND PURGE	PURGE HOLD T18 LOW FIRE SWITCH	PROPANE PILOT IGNITION	MAIN OIL IGNITION	RUN: LOW FIRE (HEATING BOILER ON LOW TO 180F)	RUN: LOW FIRE/HIGH FIRE (CONTROLLED BY STEAM PRESSURE/DEMAND)	15 SECOND POSTPURGE	STANDBY	BURNER ALARM
HONEYWELL LED DISPLAY	Power	Power	Power	Power	Power	Power	Power	Power	Power	Power	Power	Power	Power
	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot
	Flame	Flame	Flame	Flame	Flame	Flame	Flame	Flame	Flame	Flame	Flame	Flame	Flame
	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main
	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm
BURNER SYSTEM													
VFD - VARIABLE FREQUENCY DRIVE			STARTS	ON									
BURNER COMBUSTION FAN MOTOR			STARTS	ON									
COMBUSTION AIR LOUVER	CLOSED		1.5 sec TO OPEN		OPEN	1.5 sec TO CLOSE	CLOSED	OPEN TO LOW	OPEN TO LOW	HI - LOW - HI: BY STEAM PSI	OPEN	1.5 sec TO CLOSE	CLOSED
HI FIRE (LOUVER OPEN) SWITCH				ON									
LO FIRE (LOUVER CLOSED) SWITCH						ON							
PILOT IGNITION TRANSFORMER							ON FOR 10 sec THEN 10 sec						
PILOT GAS VALVE							ON FOR 10 sec THEN 10 sec						
OIL SHUTOFF VALVE								ON FOR 15 sec	ON THROUGHOUT "RUN" STATE				
1st STAGE OIL VALVE								ON FOR 15 sec	ON THROUGHOUT "RUN" STATE				
2nd STAGE OIL VALVE									ON - OFF - ON: BY STEAM PSI				
FLAME SIGNAL DETECTOR			SAFE START CHECK TO BE SURE THERE IS NO FLAME					CHECK TO PROVE FLAME					
PRIMARY SAFETY SYSTEM													
BURNER SWITCH (MANUAL)	MUST BE ON												
LOW WATER CUT-OFF 1		MAY BE ON	MUST BE ON										
LOW WATER CUT-OFF 2		MAY BE ON	MUST BE ON										
HIGH PRESS LIMIT CONTROL		MAY BE ON	MUST BE ON										
OPERATING PRESS CONTROL		MAY BE ON	MUST BE ON										
BURNER RELAY			MUST BE ON										
CR-1 CONTROL RELAY VFD			MUST BE ON										
CR-2 CONTROL RELAY VFD			MUST BE ON										
BLOWER AIR PRESS SWITCH				MUST BE ON									
PLC CONTROLS													
BURNER ON/OFF CONTROL													
DY7 BURNER RELAY				ON - BY PLC "DY7" CONTROL WHEN BURNER IS ACTIVATED FROM SCREEN OR BY "START ALL" FUNCTION									
SR RELAY ANNUNCIATION TO PLC													
SR-1 BURNER SWITCH (MANUAL)	"ON" ANUNCIATION												
SR-2 LOW WATER CUT-OFF 1		"ON" ANUNCIATION											
SR-3 LOW WATER CUT-OFF 2		"ON" ANUNCIATION											
SR-4 HIGH PRESS LIMIT CONTROL		"ON" ANUNCIATION											
SR-5 OPERATING PRESS CONTROL		"ON" ANUNCIATION											
SR-6 BURNER RELAY		"ON" ANUNCIATION											
SR-7 CR-1 CONTROL RELAY VFD		"ON" ANUNCIATION											
SR-7 CR-2 CONTROL RELAY VFD		"ON" ANUNCIATION											
SR-8 BLOWER AIR PRESS SWITCH			"ON" ANUNCIATION										
STEAM PSI & FLAME MANAGEMENT													
BOILER WATER TEMP SENSOR	CONSTANT TEMP READING BUT N/A HERE								LOW HOLD BELOW 180F	PSI CONTROL ABOVE 180F		CONSTANT TEMP READING BUT N/A HERE	
STEAM PSI 1 SENSOR	CONSTANT PSI READING ALWAYS COMPARES TO "STEAM PSI 2 SENSOR" FOR SAFETY REDUNDANCY												
AVERAGE OF STEAM PSI 1 & 2 SENSORS	PSI N/A HERE		PSI HERE MUST BE AT LEAST 0.5 PSI BELOW STEAM PSI TARGET TO START BURNER AND OPERATE THROUGH WARM-UP PERIOD						HI WHEN > 0.5 PSI BELOW TARGET LO WHEN > 0.5 PSI ABOVE TARGET			OFF WHEN > 1 PSI ABOVE STEAM PSI TARGET	
STEAM PSI 2 SENSOR	CONSTANT PSI READING ALWAYS COMPARES TO "STEAM PSI 1 SENSOR" FOR SAFETY REDUNDANCY												
HIGH FIRE RELAY									ON - OFF - ON: BY STEAM PSI				
COMBUSTION AIR LOUVER	CLOSED		1.5 sec TO OPEN		OPEN	1.5 sec TO CLOSE	CLOSED	OPEN TO LOW	OPEN TO LOW	HI - LOW - HI: BY STEAM PSI	OPEN	1.5 sec TO CLOSE	CLOSED

# DewPoint 6110

Burner Training

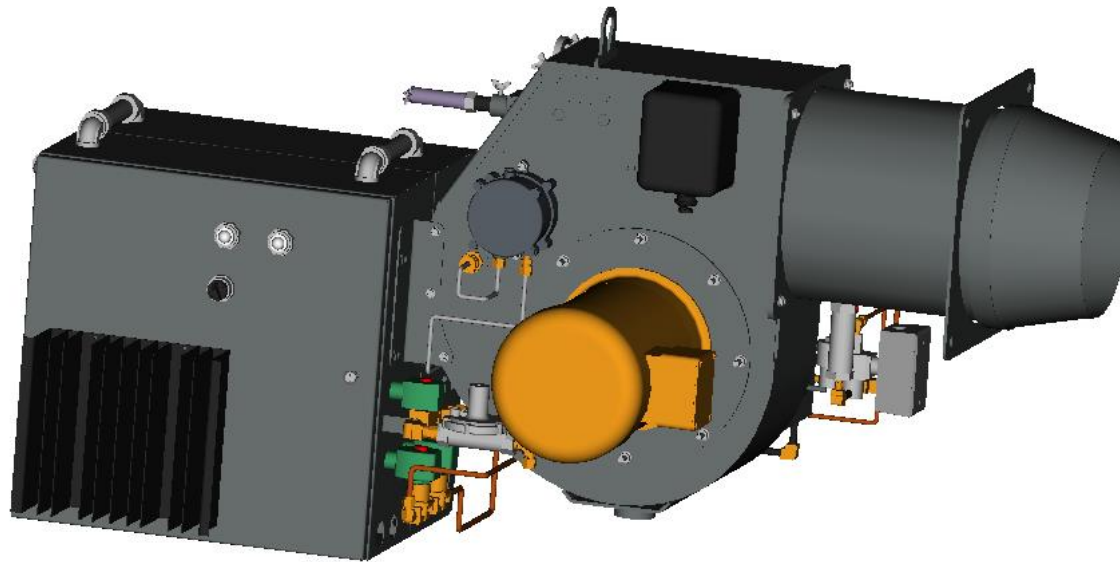
# Complete Burner Overview

Right Side View



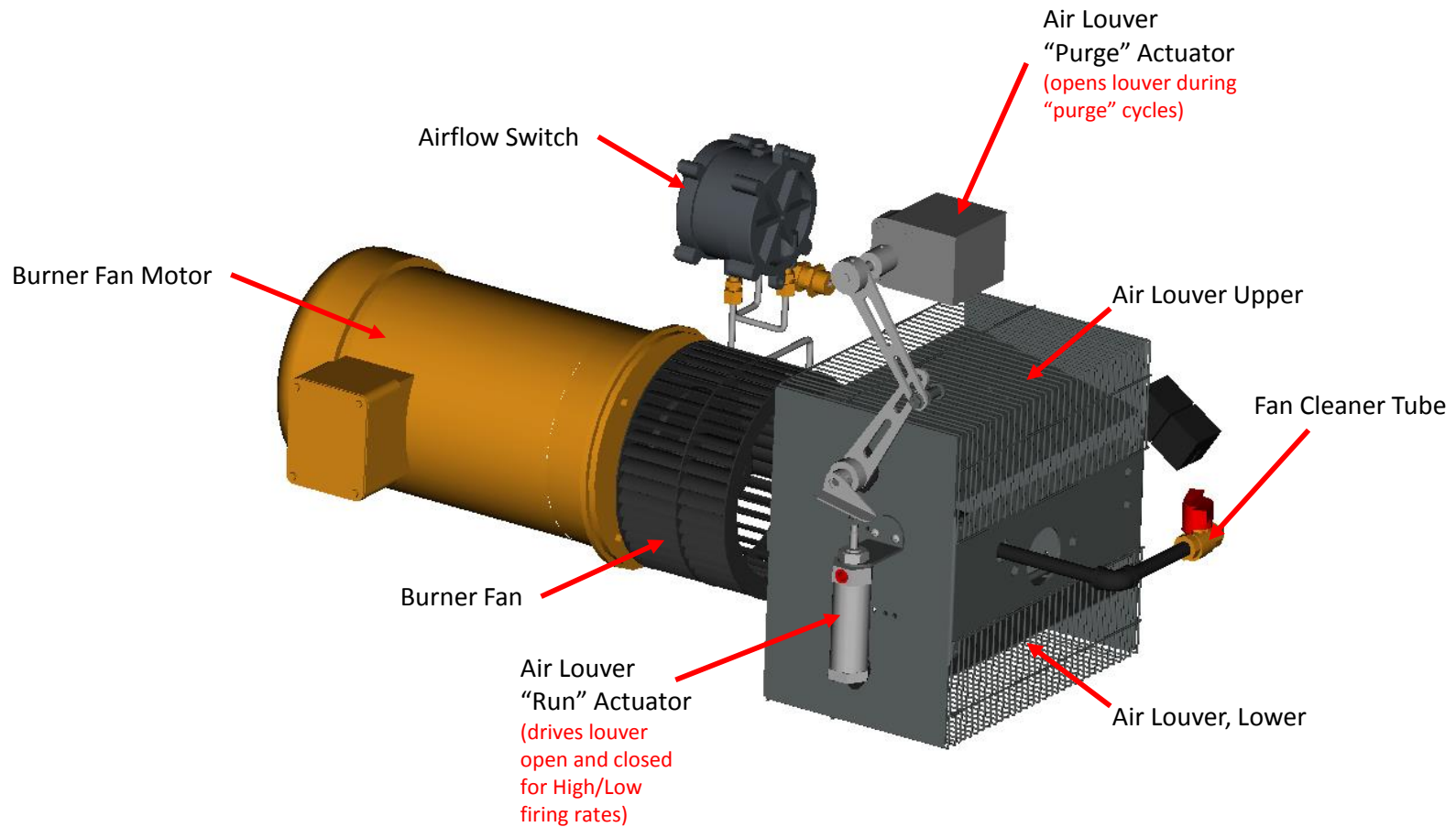
# Complete Burner Overview

Left Side View



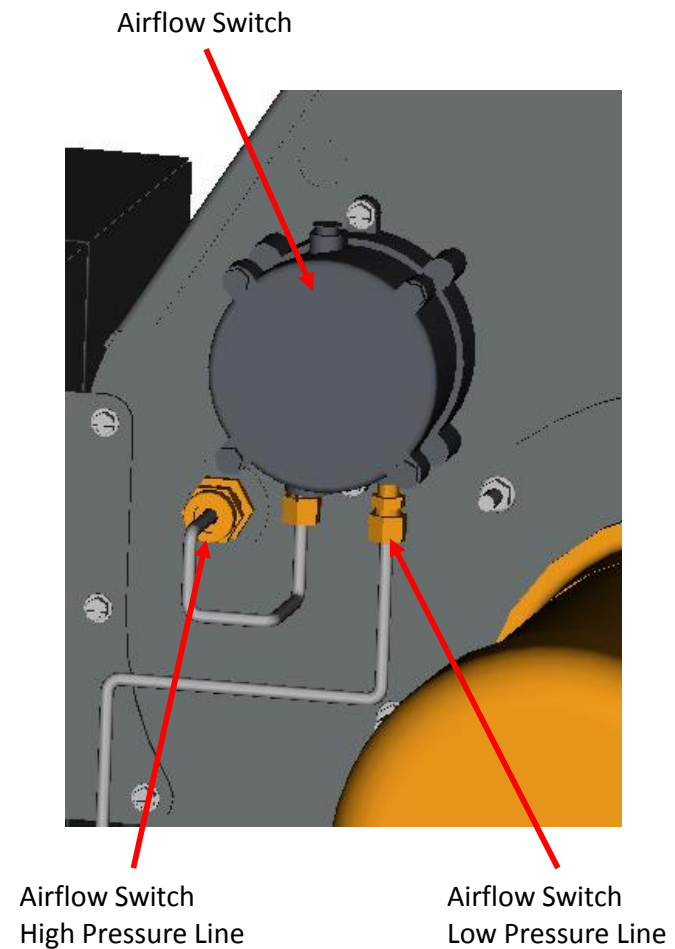
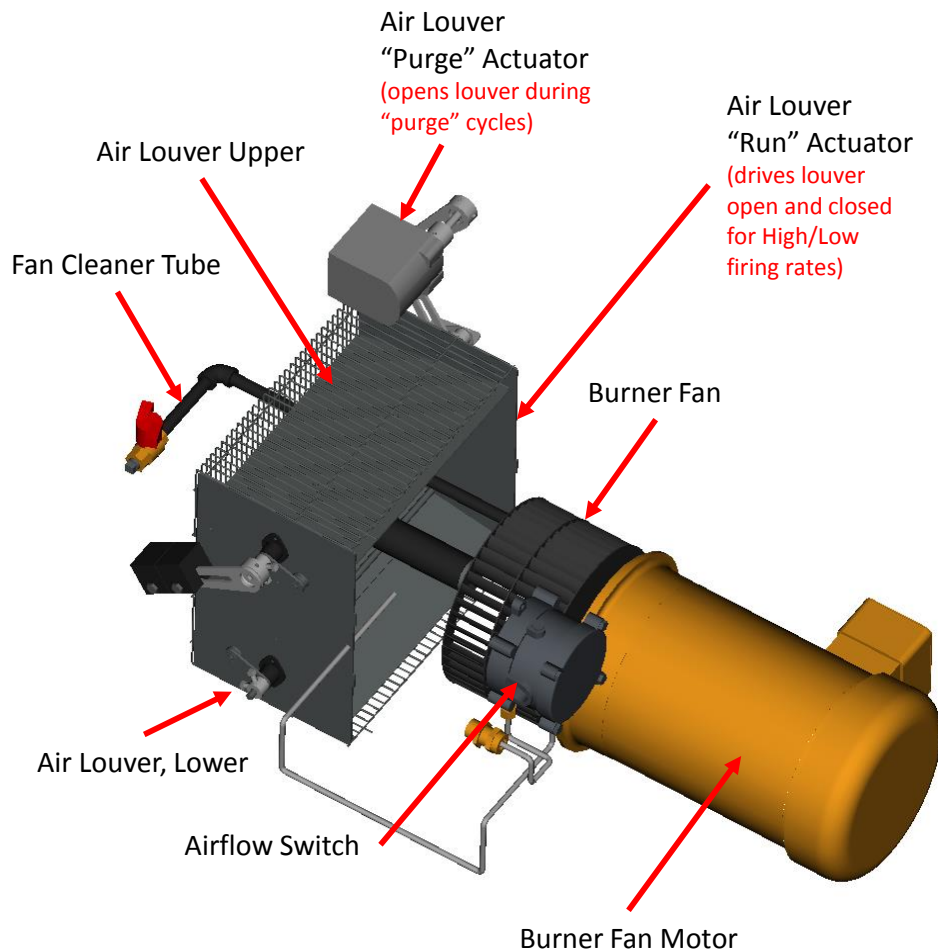
# Air System

## Right Rear View



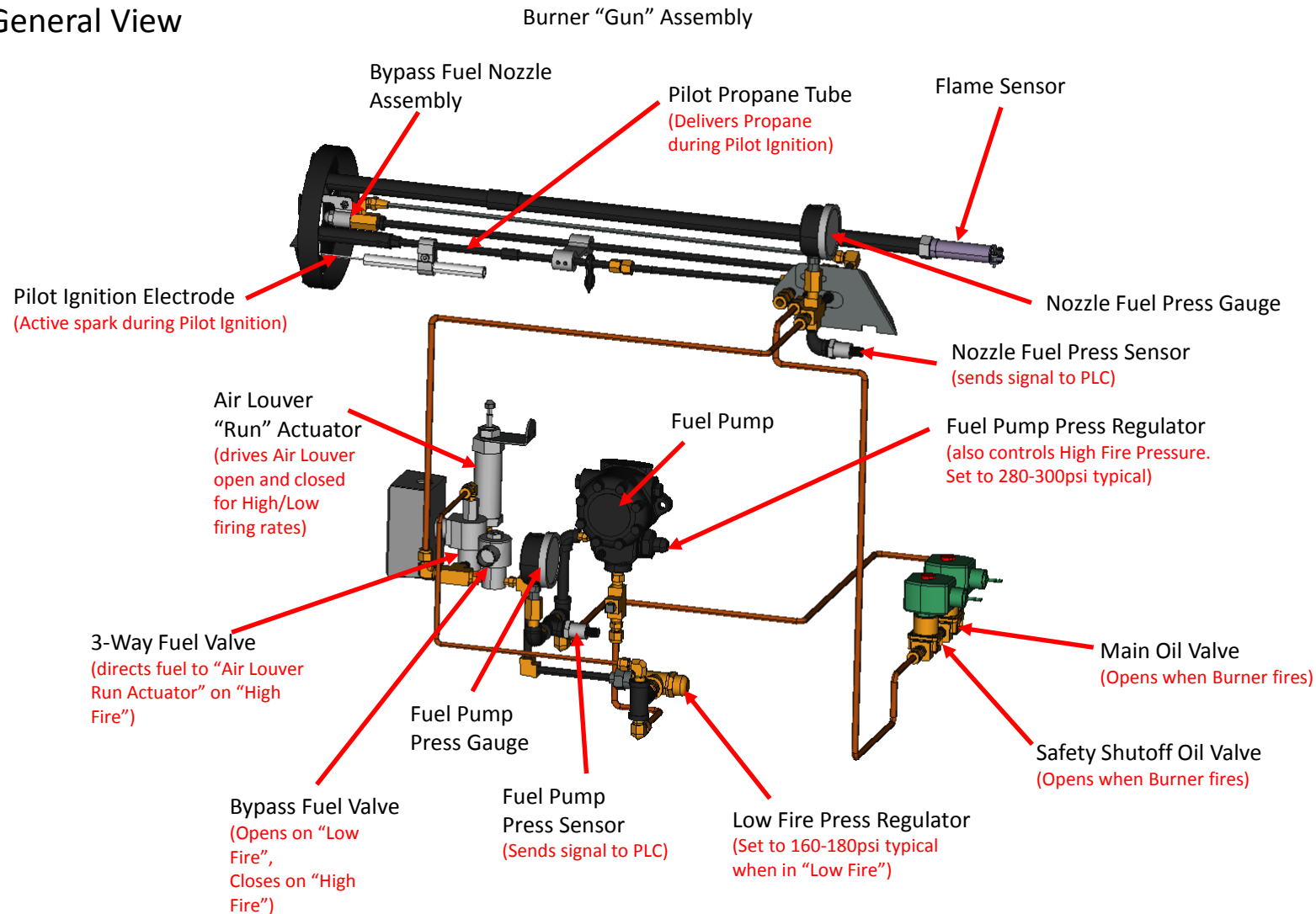
# Air System

Top, Front Left View



# Fuel System

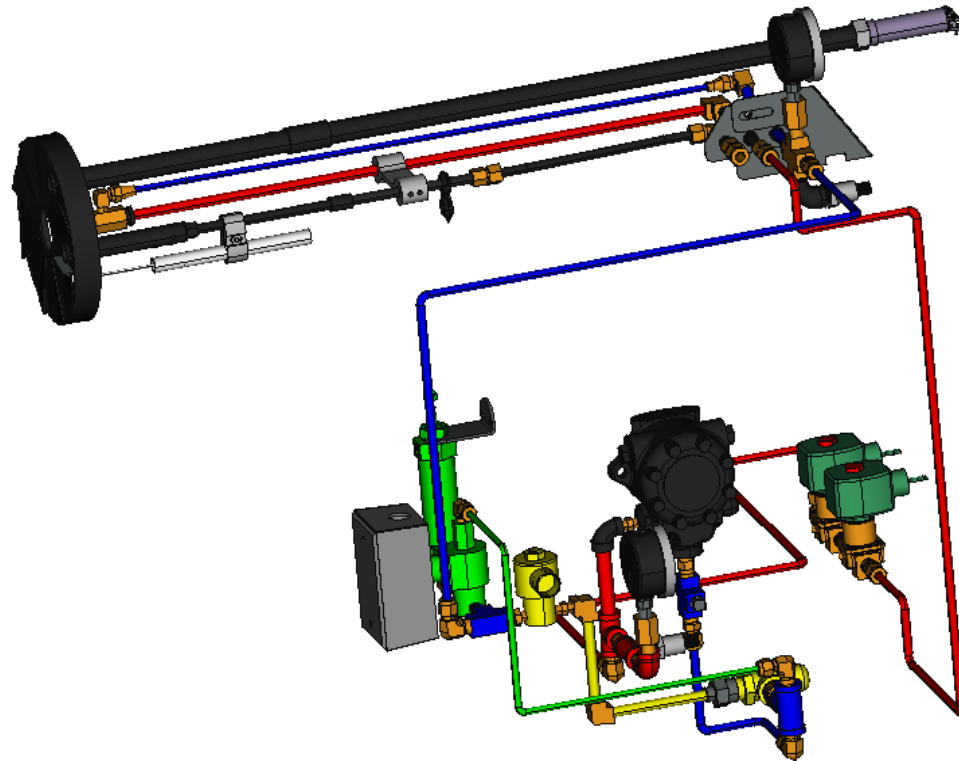
## General View



# Fuel System

## Color Right Front View

- Red = Oil Pressure from Fuel Pump to Bypass Nozzle
- Blue = Return Oil from Bypass Nozzle
- Yellow = Final Return Oil on Low Fire when Bypass Valve is “open” and 3way valve is “closed”
- Green = Final Return Oil on High Fire when 3way Valve is “open and Bypass Valve is “closed”

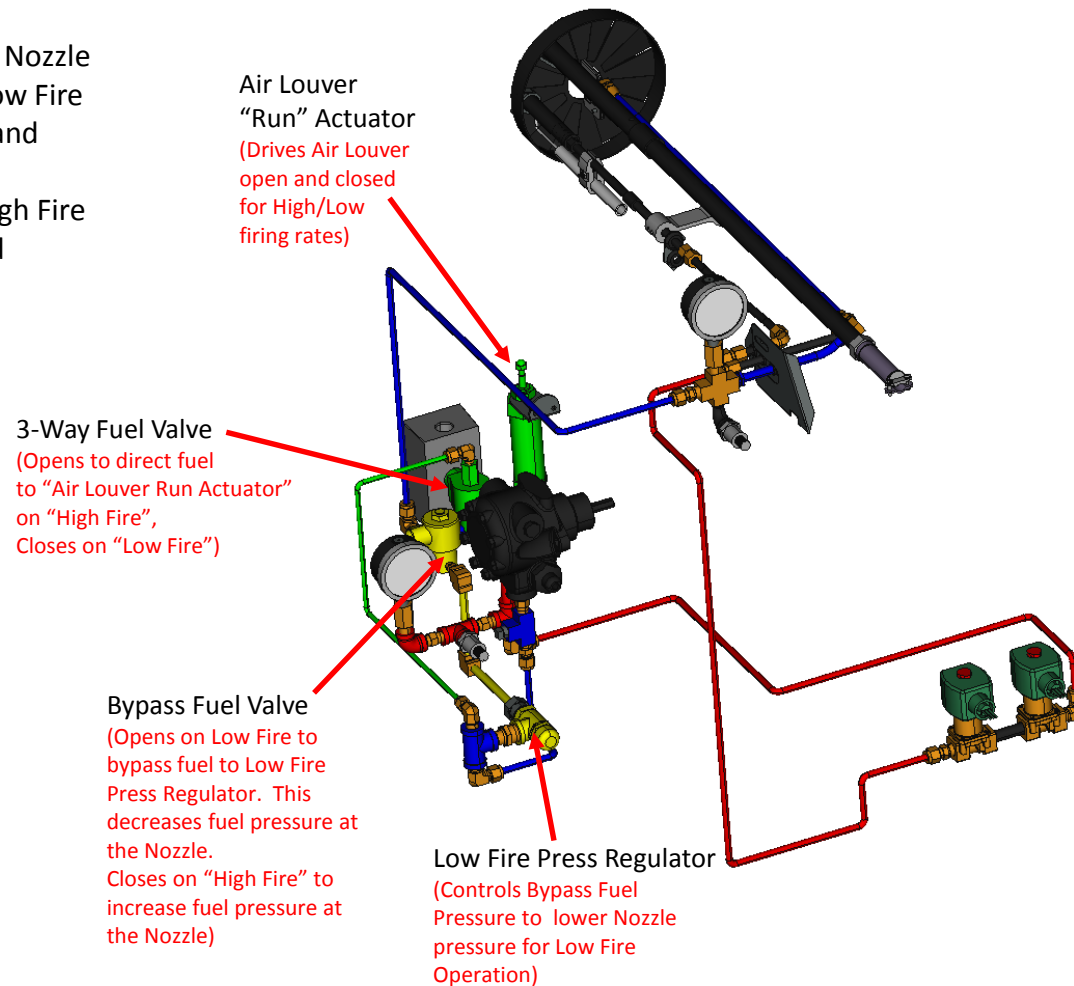




# Fuel System

## Color Right Front View

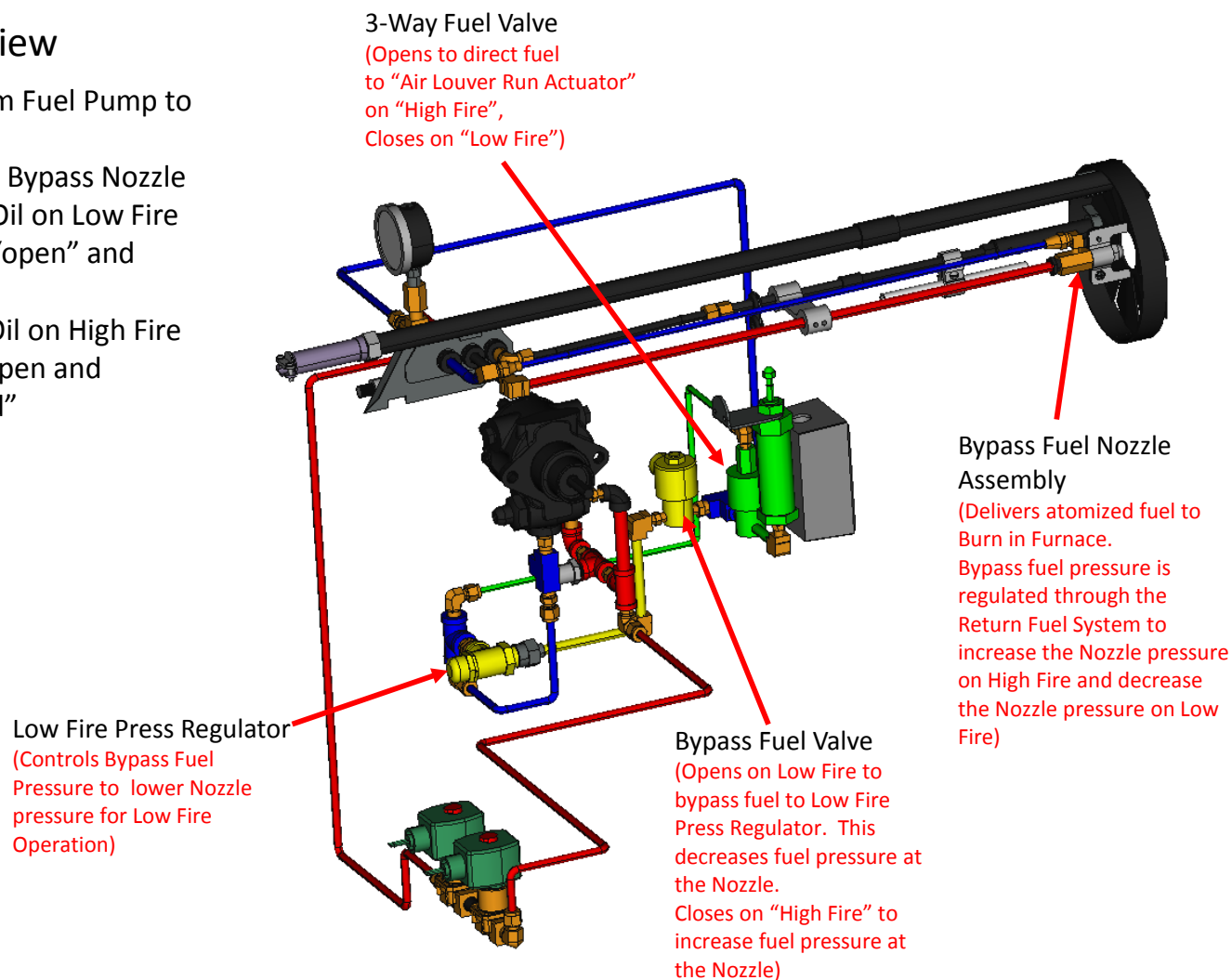
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# Fuel System

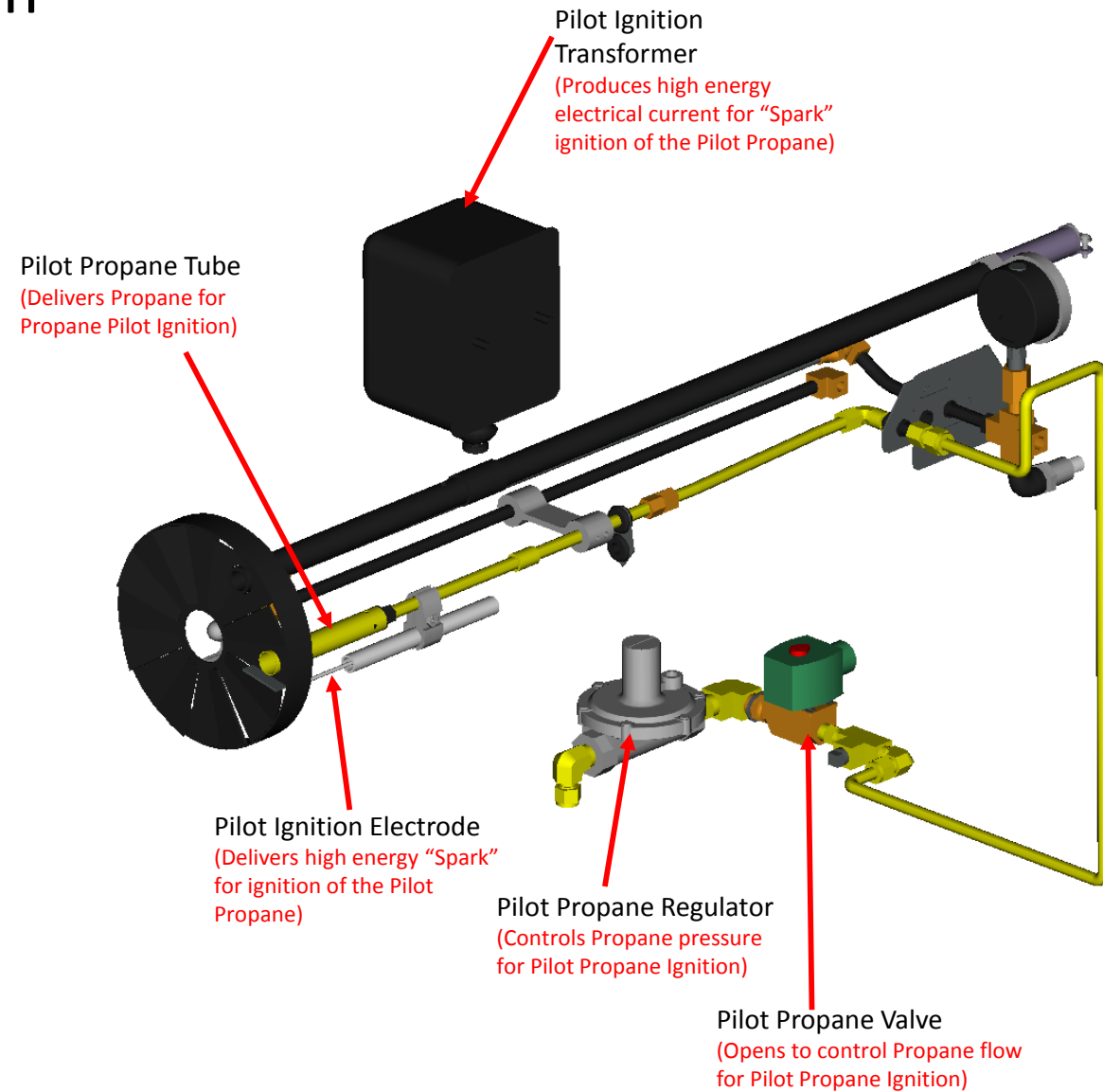
## Color Right Front View

- Red = Oil Pressure from Fuel Pump to Bypass Nozzle
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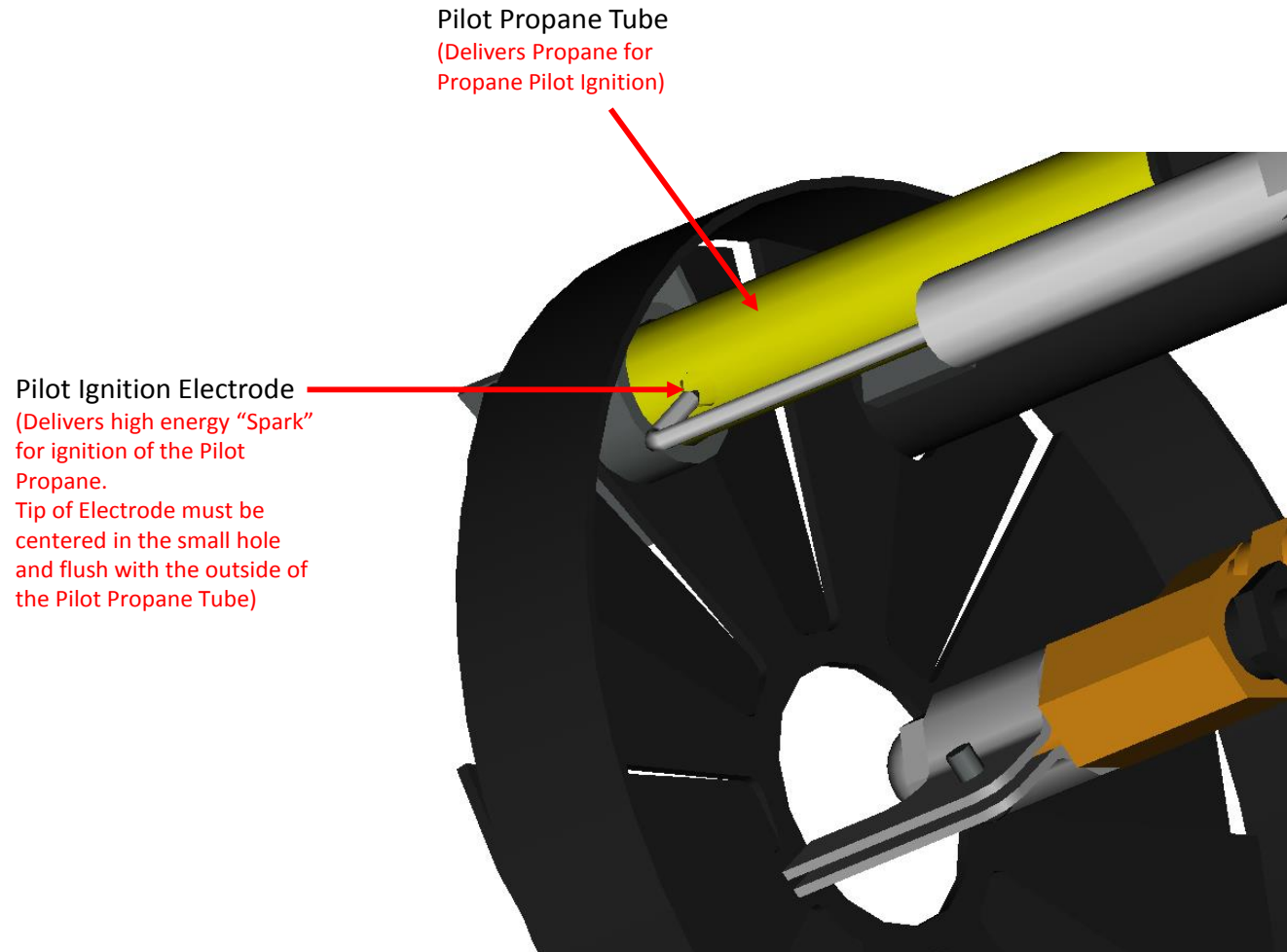
# Ignition System

## General



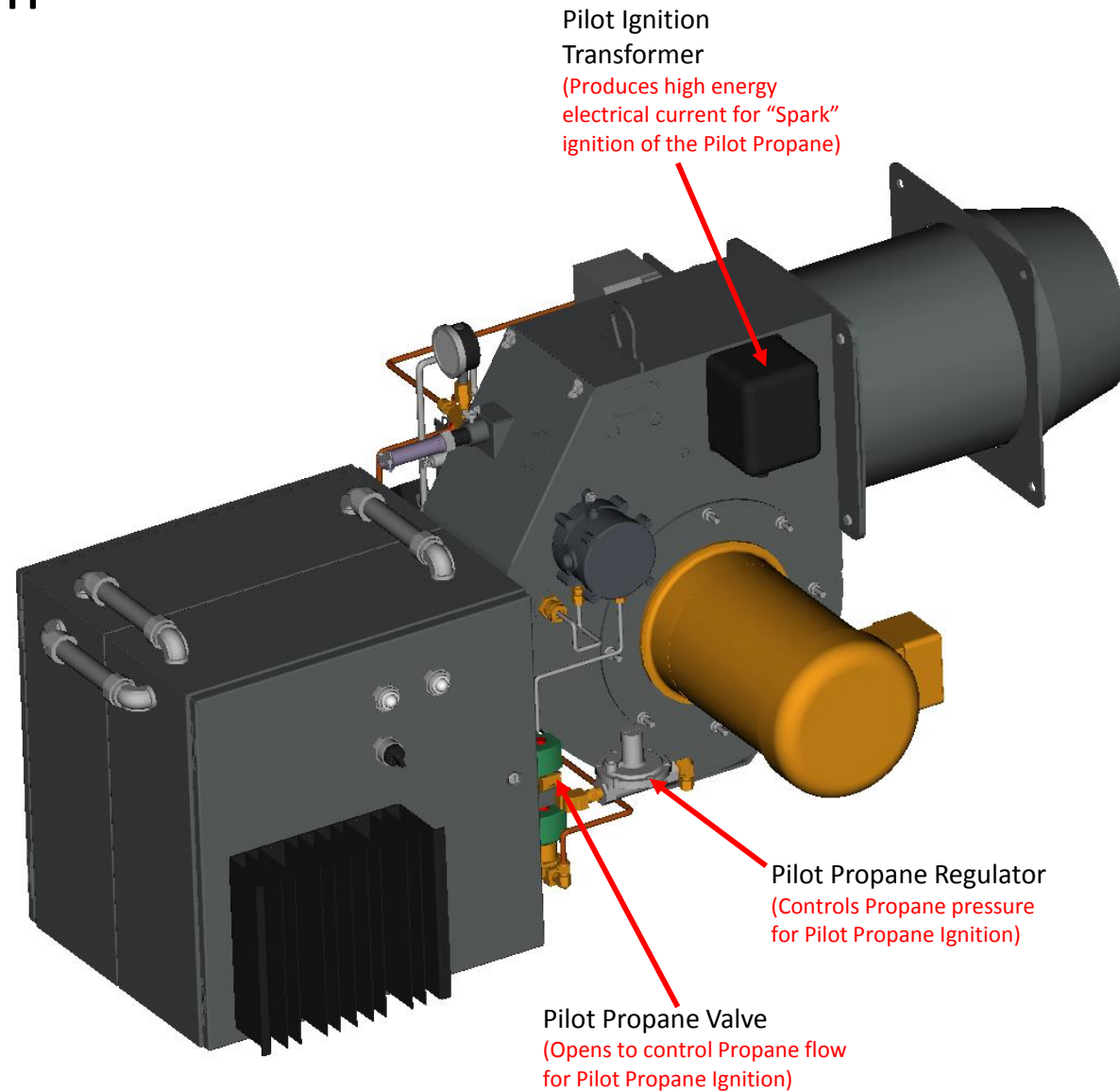
# Ignition System

## Ignition Electrode



# Ignition System

## Component Location



# Air/Fuel Adjustment

## PREREQUISITE

The Burner Fan and Burner Gun Assembly **MUST BE COMPLETELY CLEAN** before adjusting the Air/Fuel Ratio to tune the Burner.

If Flue Temperatures are running high, above 600 degrees, your Boiler Fire Tubes are likely sooted-up and will also require cleaning before tuning the Burner

4. Check for Smoke on High Fire  
With Fuel Pump Pressure set to 280-300psi with Burner running, this should produce Nozzle Pressure of 160-180psi on High Fire

Air Louvers should be fully open

There should be **no continuous smoke** on High Fire, however it is normal to see a short "puff" of dark smoke when the burner transitions from Low to High Fire

If there is smoke, lower the Pump Pressure until smoke clears. If you must lower the Pump Pressure to less than 250psi you will need to diagnose the problem and correct it before operation

**DO NOT RUN A SMOKEY BURNER!!!**

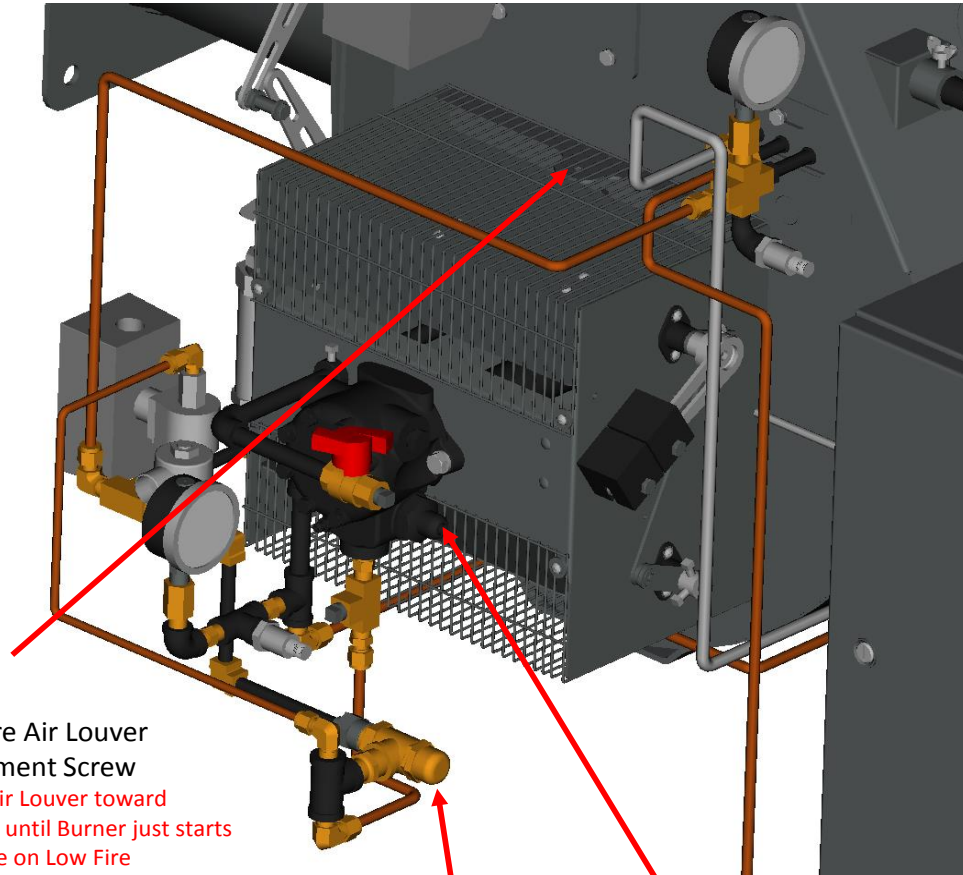
3. Low Fire Air Louver Adjustment Screw  
Adjust Air Louver toward "closed" until Burner just starts to smoke on Low Fire

Then adjust Air Louver toward "open" until Burner just clears smoke on Low Fire

Finally, adjust Air Louver toward "open" 1 additional turn on Low Fire

2. Low Fire Press Regulator  
While Burner is in Low Fire (Air Louvers closed), set Nozzle pressure to 70-80psi

1. Fuel Pump Press Regulator  
Set Fuel Pump Pressure to 280-300psi with Burner running.

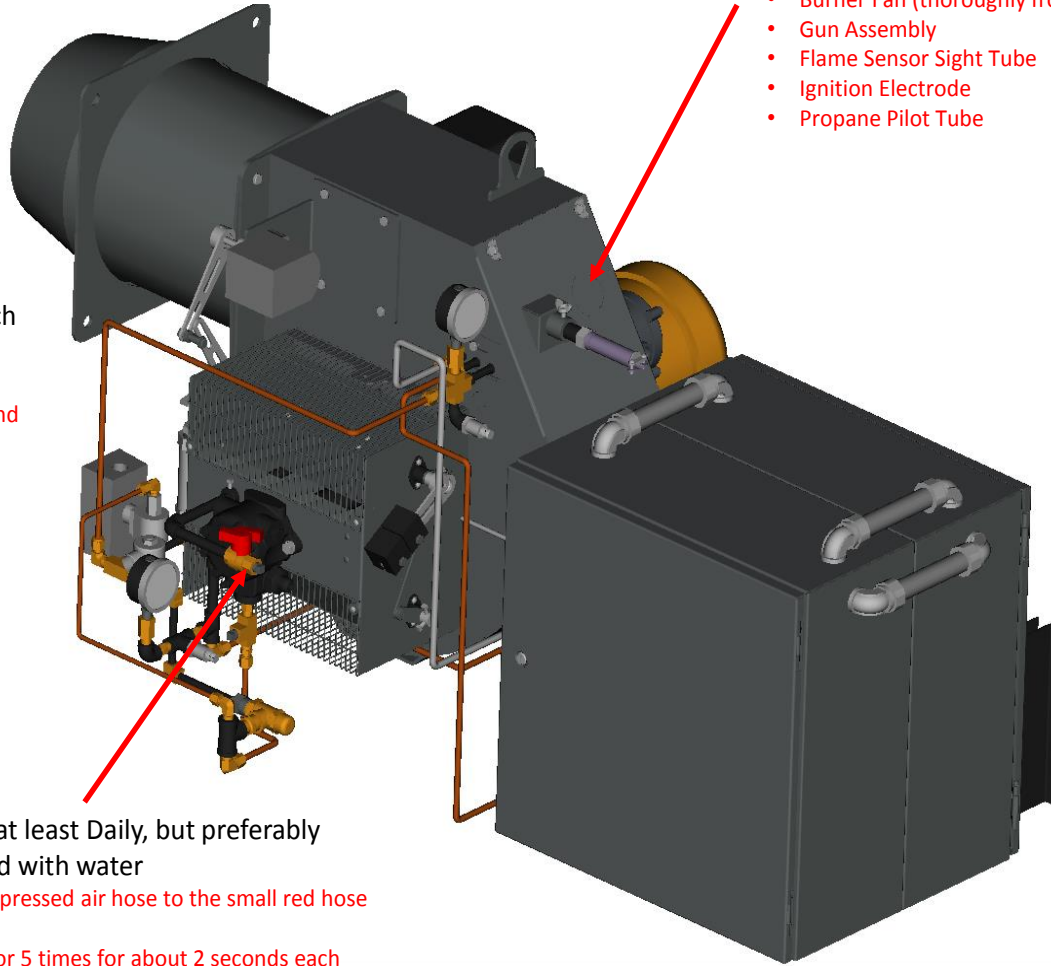


# Cleaning

1. Clean entire Burner Area at least Daily, but preferably each time you load with water
  - Use Compressed Air to remove dust and crop debris from around the Burner and Generator

2. Clean Burner Fan at least Daily, but preferably each time you load with water
  - Connect your compressed air hose to the small red hose on this valve
  - Open the Valve 4 or 5 times for about 2 seconds each time to blow dust off the fins of the Burner Fan
  - Be sure your compressed air has enough pressure to spin the Fan

3. Clean Burner Internally every 50 Hours
  - Remove this front cover and use compressed air to clean the
    - Burner Fan (thoroughly from the top)
    - Gun Assembly
    - Flame Sensor Sight Tube
    - Ignition Electrode
    - Propane Pilot Tube



## Reference Resources

For Complete DewPoint 6110 Burner Training Videos, Go To:

[www.staheliwest.com](http://www.staheliwest.com)

- Login
- Customer Portal
  - User name: customer
  - Password: dewpoint
- 6110 Burner Videos

Or go to this link:

[https://drive.google.com/folderview?id=0BzP5iQzMFZCaflRXT3lrUIJoWIN3bVJYcTJvODBlTVna2FnVnFQWHc5S3JiUk9ieHlhZUk&usp=drive\\_web](https://drive.google.com/folderview?id=0BzP5iQzMFZCaflRXT3lrUIJoWIN3bVJYcTJvODBlTVna2FnVnFQWHc5S3JiUk9ieHlhZUk&usp=drive_web)

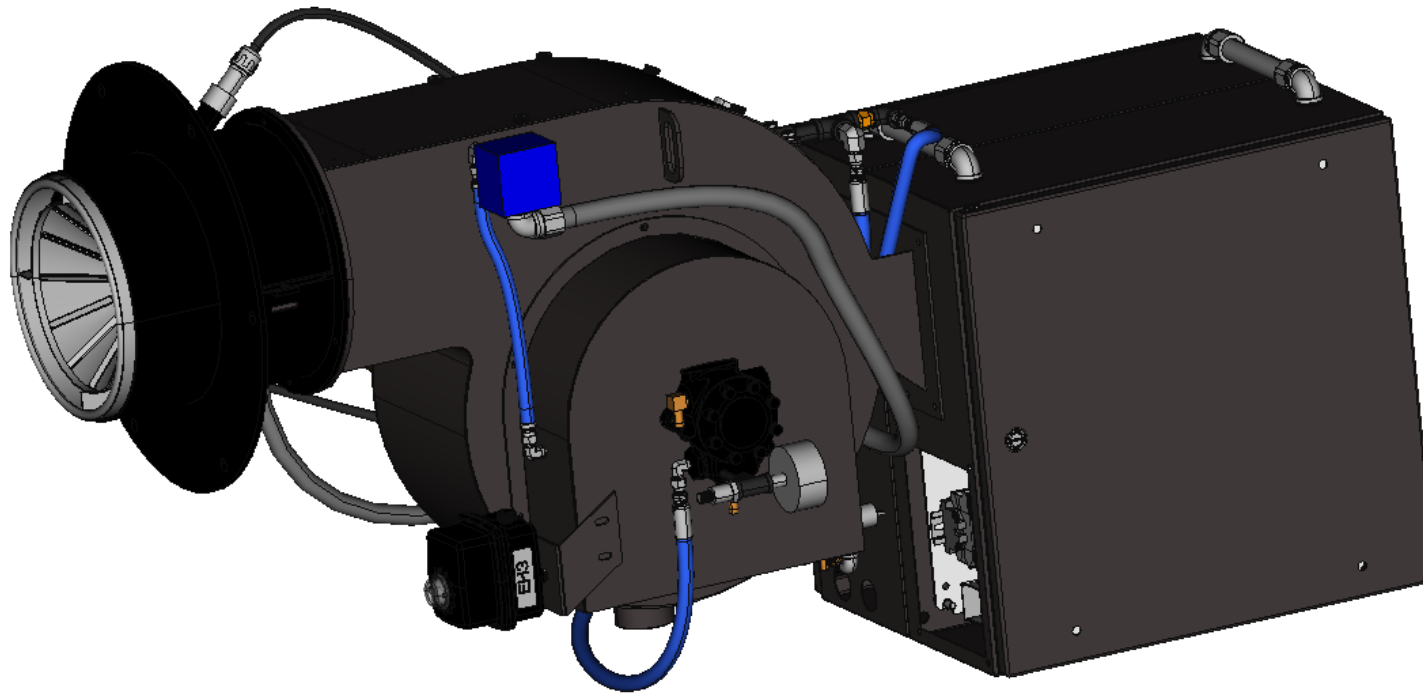


# DewPoint 6210

Burner Training

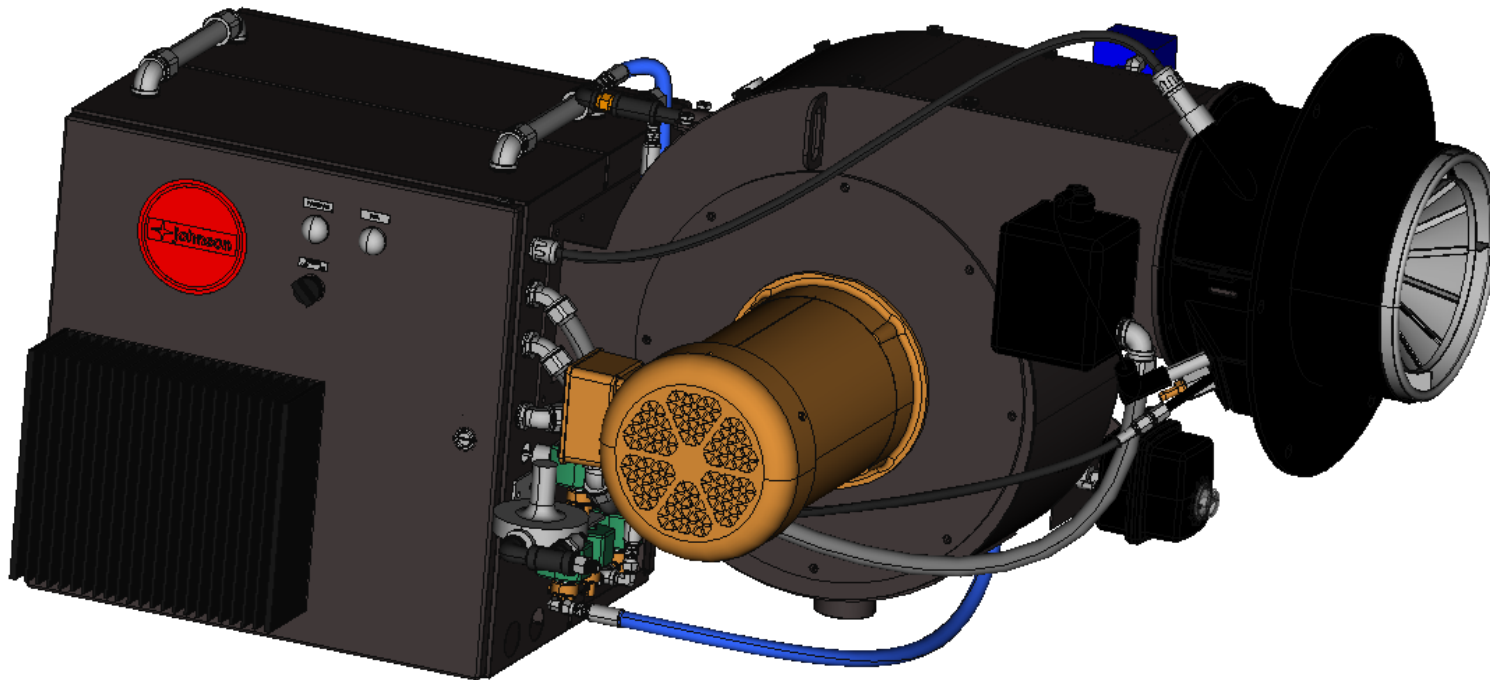
# Complete Burner Overview

### Right Side View



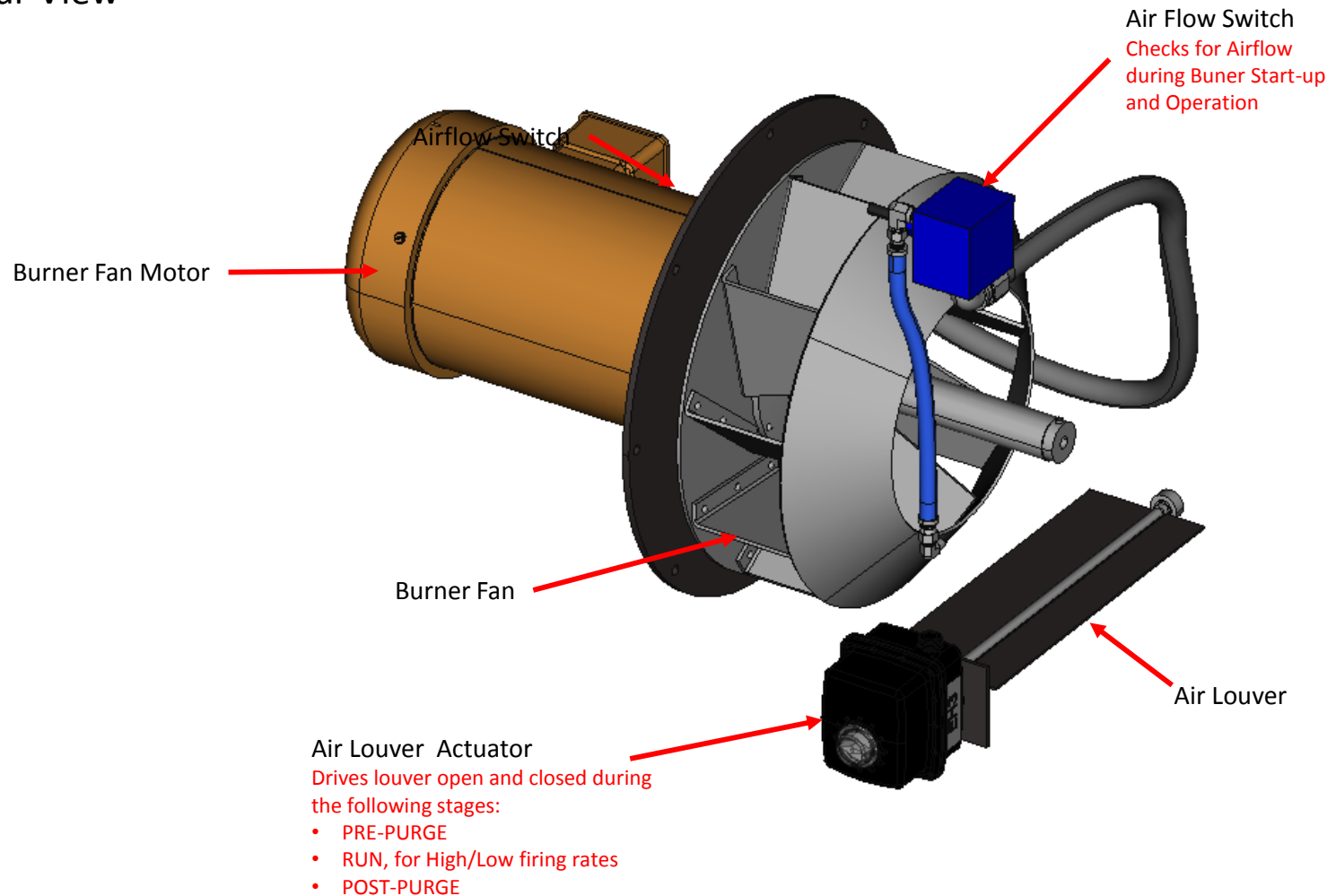
# Complete Burner Overview

Left Side View



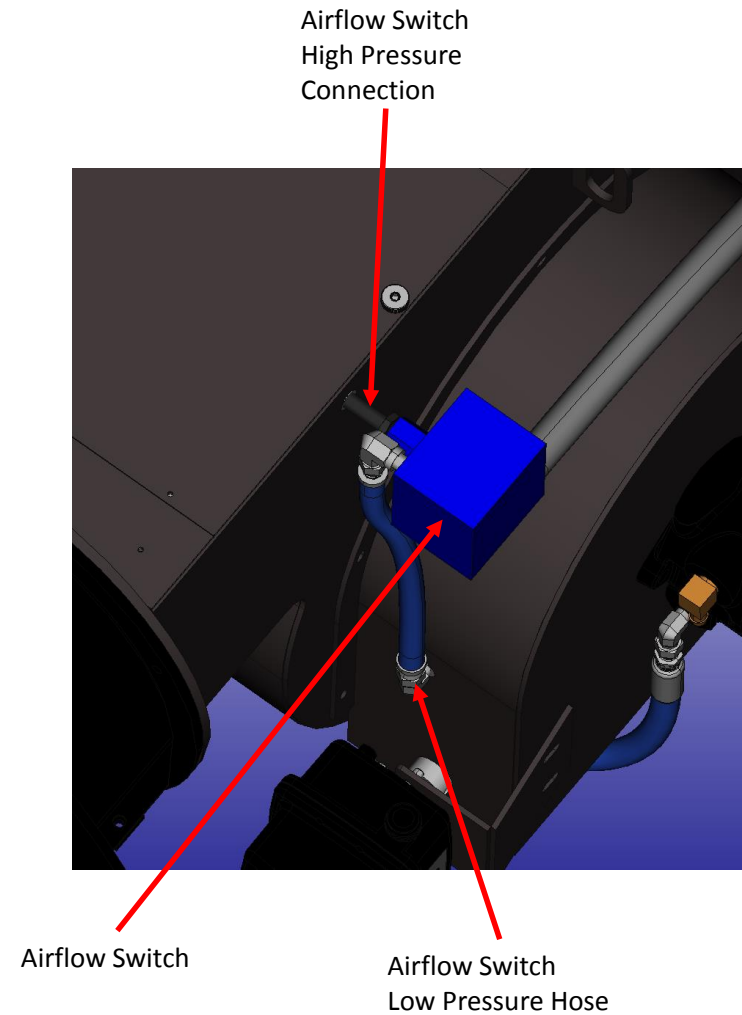
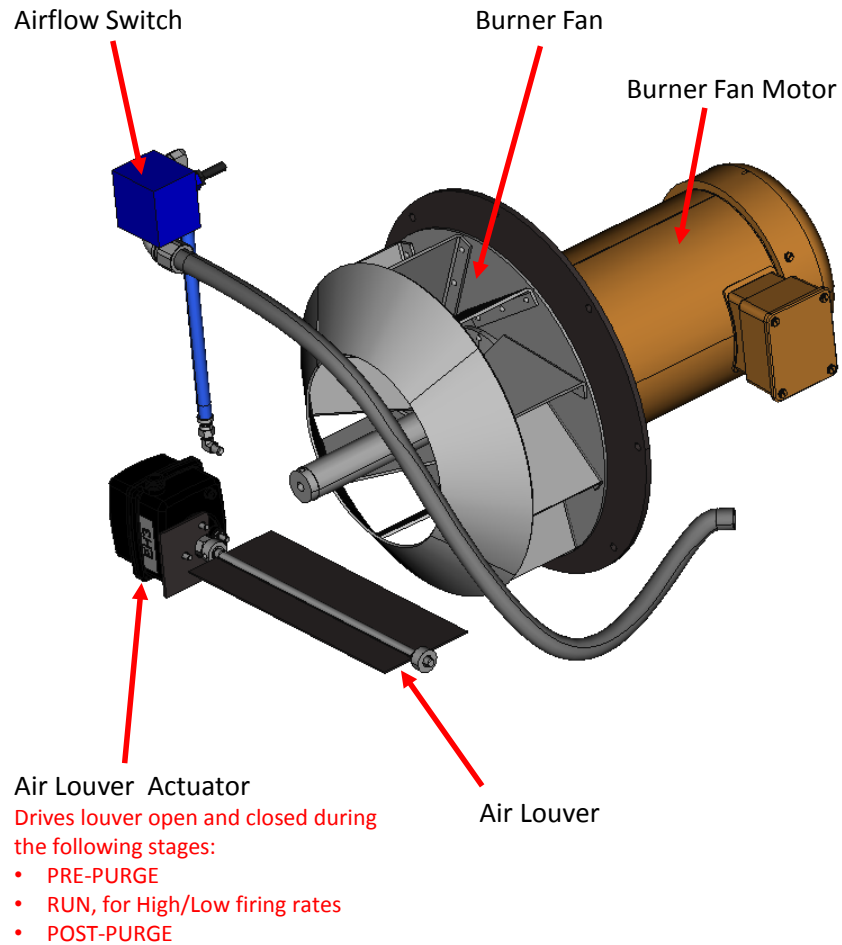
# Air System

## Right Rear View



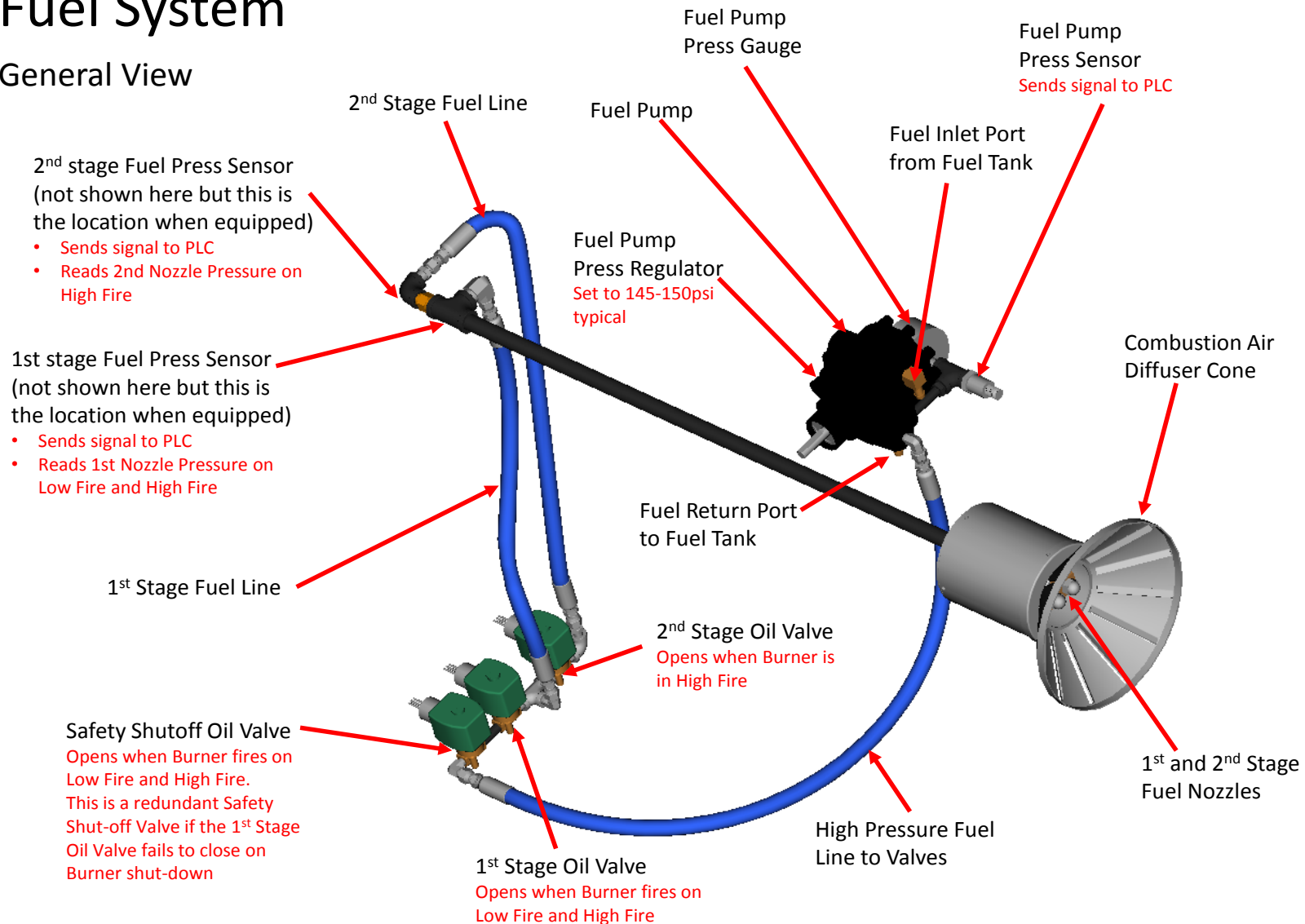
# Air System

Right, Front View



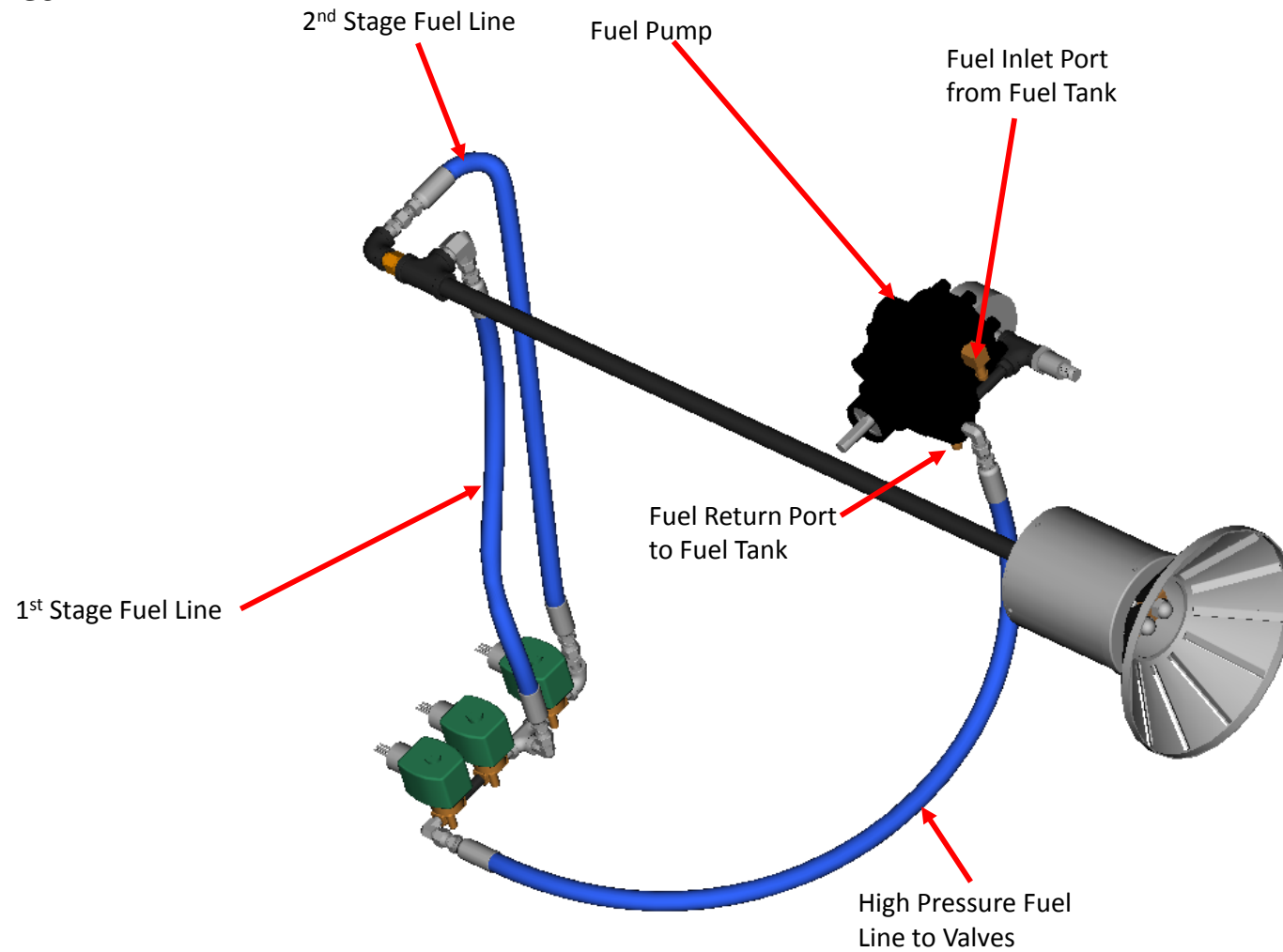
# Fuel System

## General View



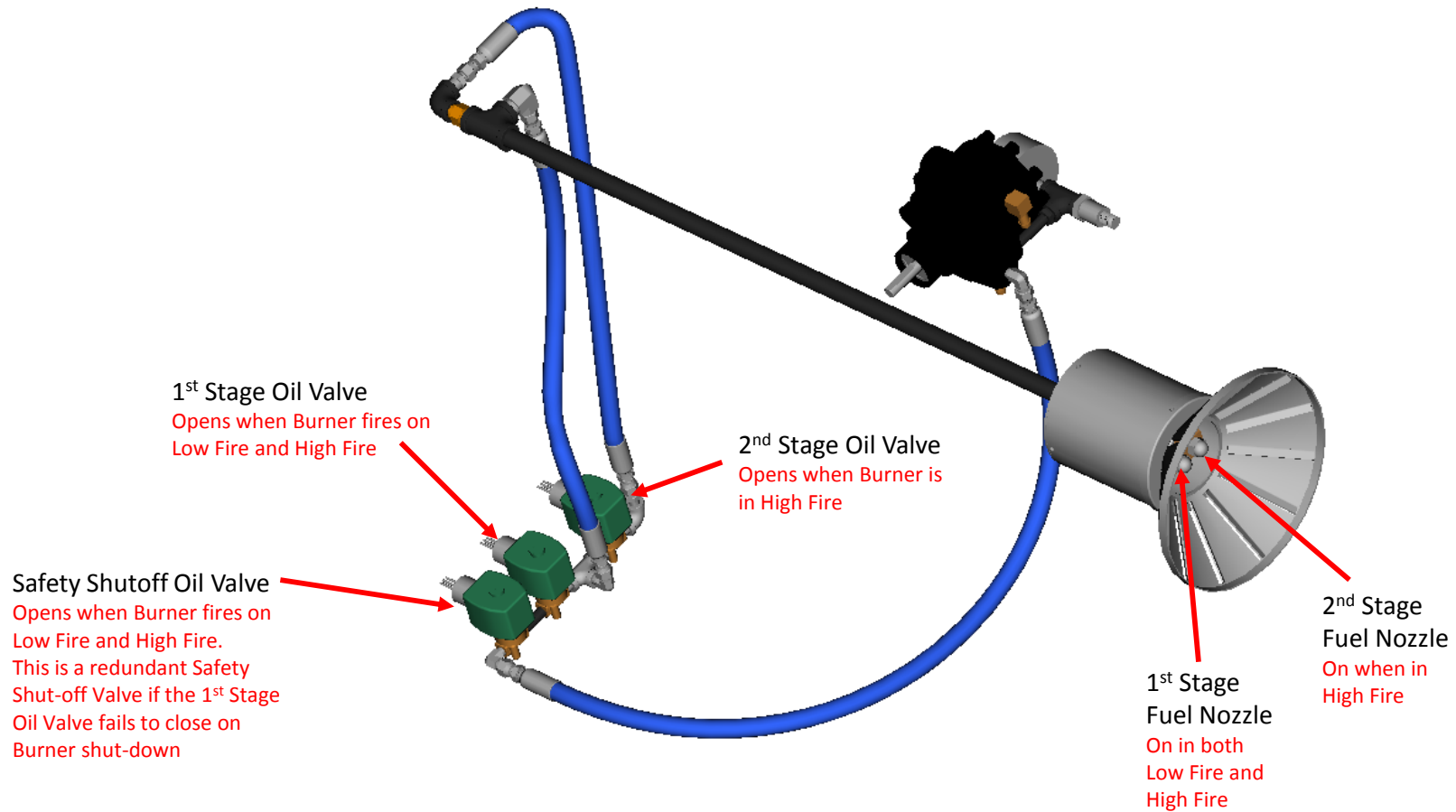
# Fuel System

## Fuel Lines



# Fuel System

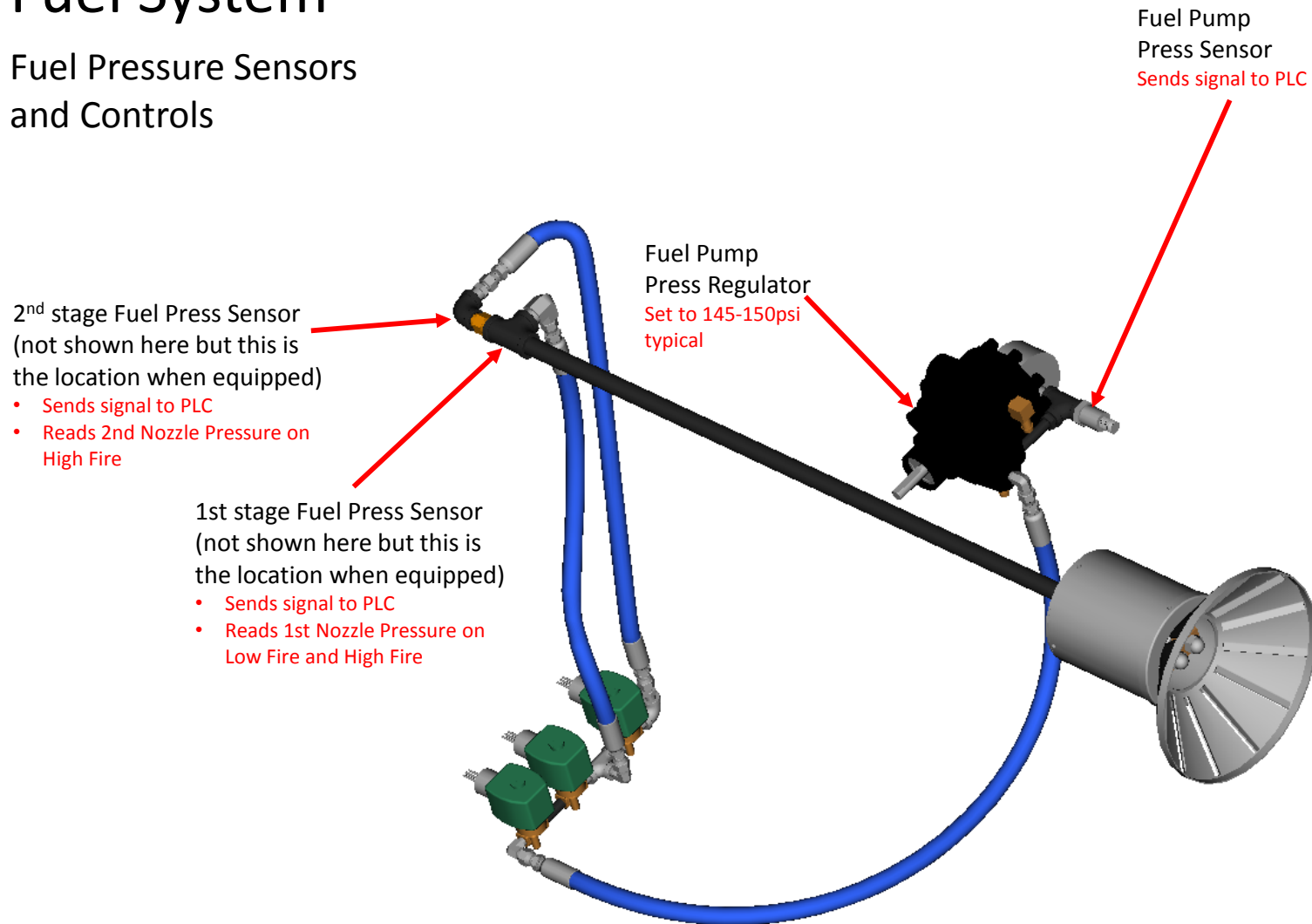
## Fuel Valves and Nozzles





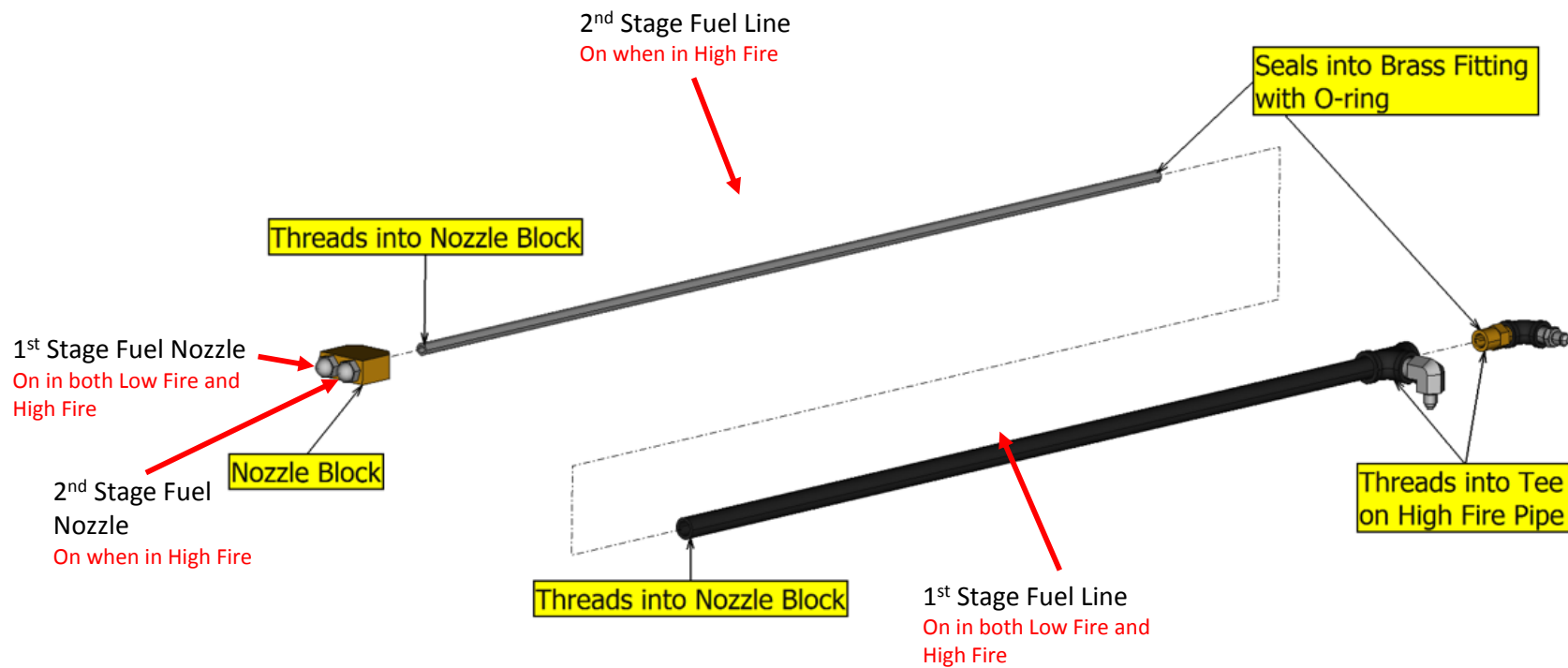
# Fuel System

## Fuel Pressure Sensors and Controls



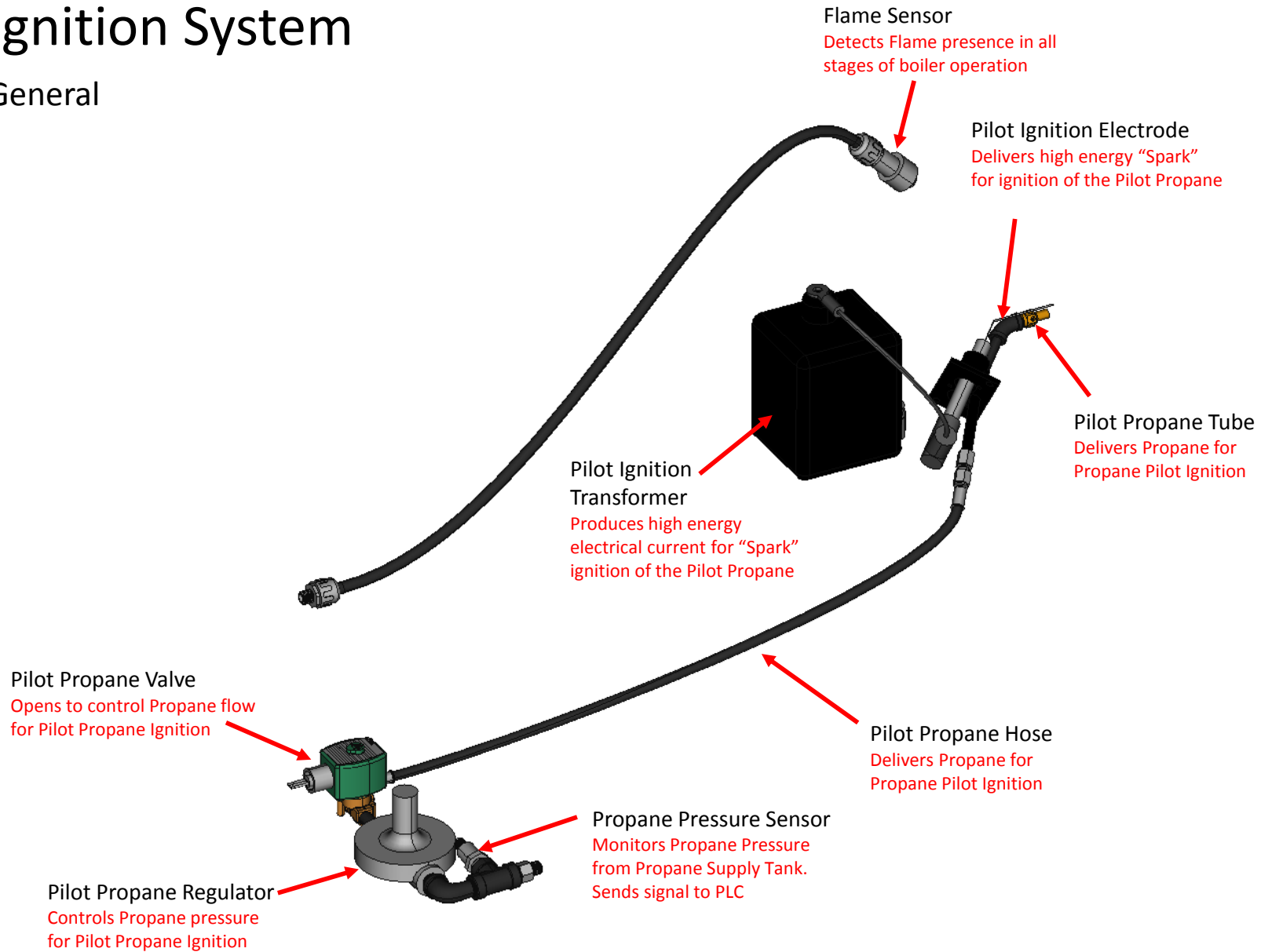
# Fuel System

## 1<sup>st</sup> & 2<sup>nd</sup> Stage Burner Gun Assembly Exploded View



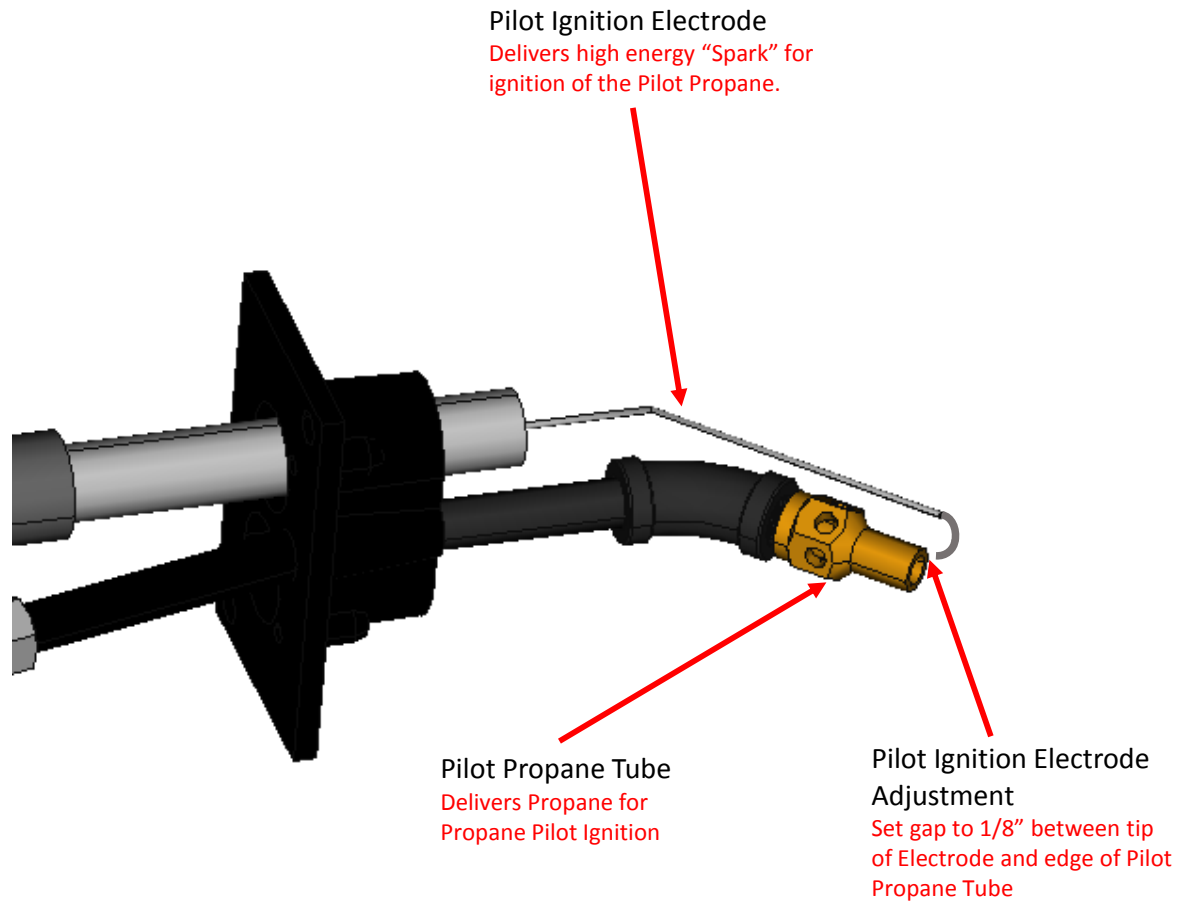
# Ignition System

## General



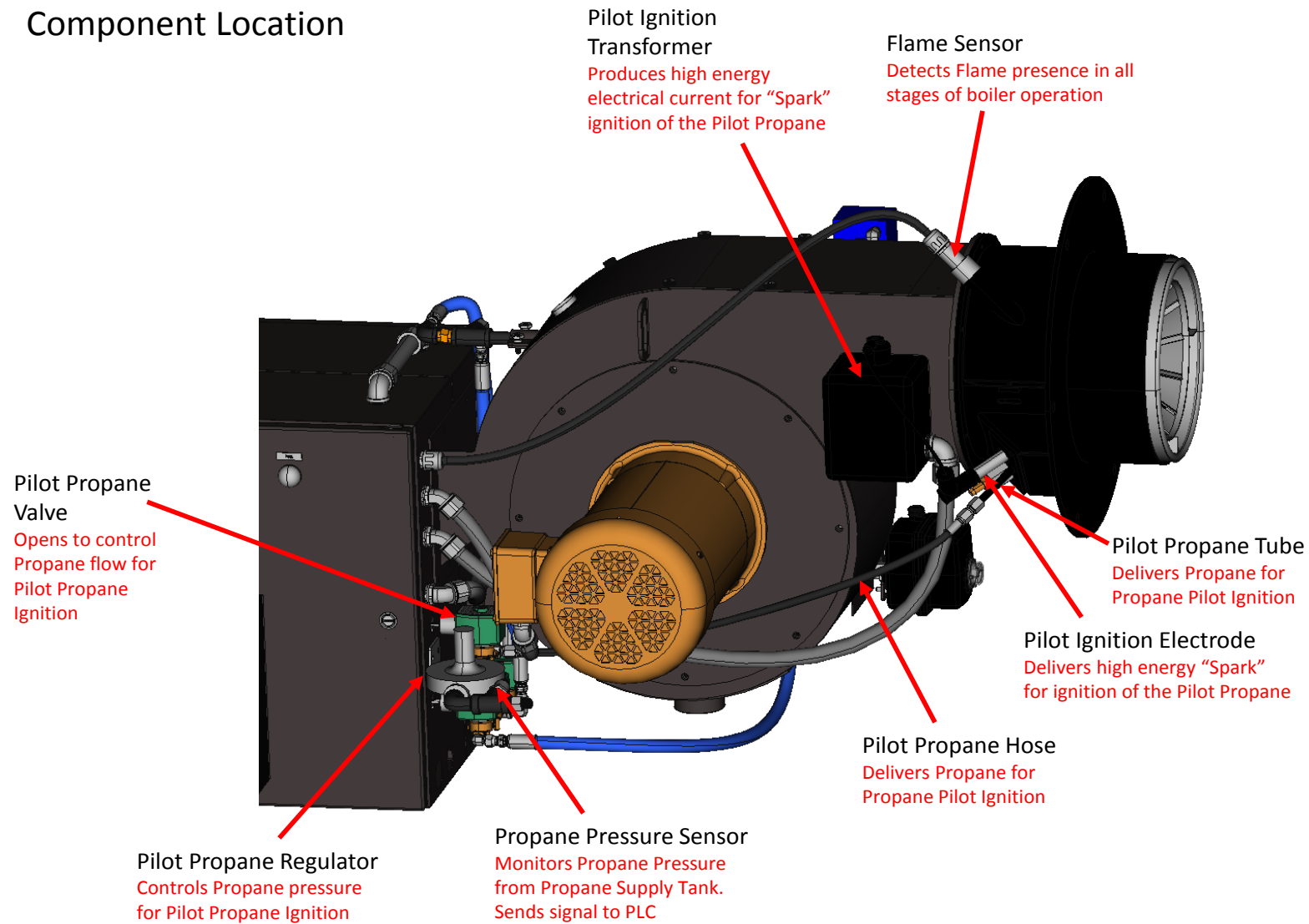
# Ignition System

## Ignition Electrode



# Ignition System

## Component Location



## DewPoint 6210 Burner Sequence Table

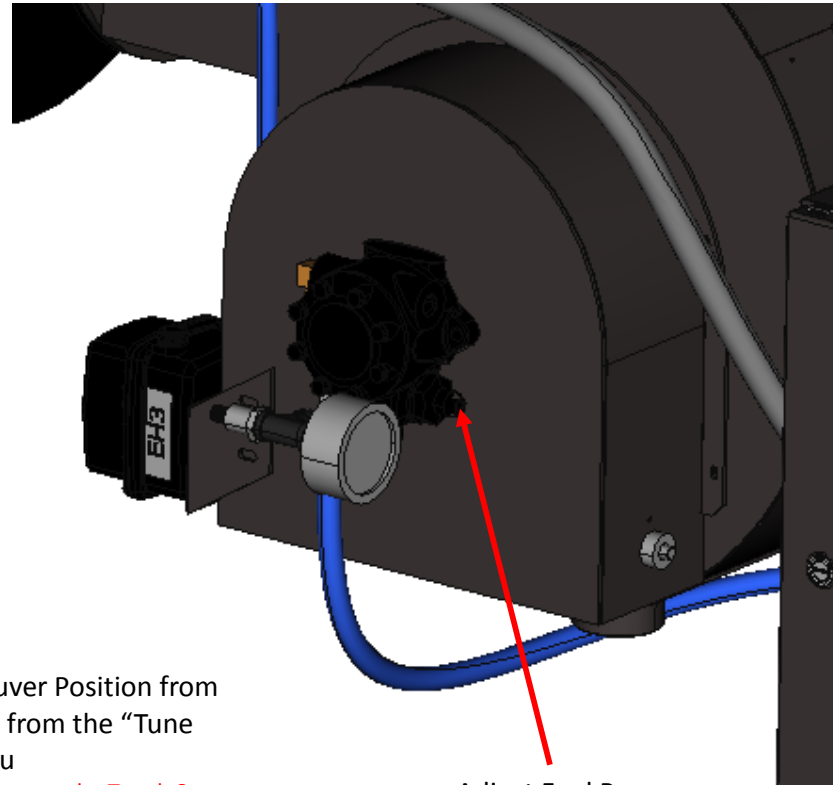
BURNER STATE	INITIATE	STANDBY	SAFETY START	PURGE HOLD T19 HI FIRE SWITCH	30 SECOND PURGE	PURGE HOLD T18 LOW FIRE SWITCH	PROPANE PILOT IGNITION	MAIN OIL IGNITION	RUN: LOW FIRE (HEATING BOILER ON LOW TO 180F)	RUN: LOW FIRE/HIGH FIRE (CONTROLLED BY STEAM PRESSURE/DEMAND)	15 SECOND POSTPURGE	STANDBY	BURNER ALARM
HONEYWELL LED DISPLAY	Power	Power	Power	Power	Power	Power	Power	Power	Power	Power	Power	Power	Power
	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot	Pilot
	Flame	Flame	Flame	Flame	Flame	Flame	Flame	Flame	Flame	Flame	Flame	Flame	Flame
	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main
	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm	Alarm
BURNER SYSTEM													
VFD - VARIABLE FREQUENCY DRIVE			STARTS	ON									
BURNER COMBUSTION FAN MOTOR			STARTS	ON									
COMBUSTION AIR LOUVER	CLOSED		1.5 sec TO OPEN		OPEN	1.5 sec TO CLOSE	CLOSED	OPEN TO LOW	OPEN TO LOW	HI - LOW - HI: BY STEAM PSI	OPEN	1.5 sec TO CLOSE	CLOSED
HI FIRE (LOUVER OPEN) SWITCH					ON								
LO FIRE (LOUVER CLOSED) SWITCH						ON							
PILOT IGNITION TRANSFORMER							ON FOR 10 sec THEN 10 sec						
PILOT GAS VALVE							ON FOR 10 sec THEN 10 sec						
OIL SHUTOFF VALVE								ON FOR 15 sec	ON THROUGHOUT "RUN" STATE				
1st STAGE OIL VALVE								ON FOR 15 sec	ON THROUGHOUT "RUN" STATE				
2nd STAGE OIL VALVE										ON - OFF - ON: BY STEAM PSI			
FLAME SIGNAL DETECTOR			SAFE START CHECK TO BE SURE THERE IS NO FLAME					CHECK TO PROVE FLAME					
PRIMARY SAFETY SYSTEM													
BURNER SWITCH (MANUAL)	MUST BE ON												
LOW WATER CUT-OFF 1		MAY BE ON	MUST BE ON										
LOW WATER CUT-OFF 2		MAY BE ON	MUST BE ON										
HIGH PRESS LIMIT CONTROL		MAY BE ON	MUST BE ON										
OPERATING PRESS CONTROL		MAY BE ON	MUST BE ON										
BURNER RELAY			MUST BE ON										
CR-1 CONTROL RELAY VFD			MUST BE ON										
CR-2 CONTROL RELAY VFD			MUST BE ON										
BLOWER AIR PRESS SWITCH				MUST BE ON									
PLC CONTROLS													
BURNER ON/OFF CONTROL													
DY7 BURNER RELAY				ON - BY PLC "DY7" CONTROL WHEN BURNER IS ACTIVATED FROM SCREEN OR BY "START ALL" FUNCTION									
SR RELAY ANNUNCIATION TO PLC													
SR-1 BURNER SWITCH (MANUAL)	"ON" ANNUNCIATION												
SR-2 LOW WATER CUT-OFF 1		"ON" ANNUNCIATION											
SR-3 LOW WATER CUT-OFF 2		"ON" ANNUNCIATION											
SR-4 HIGH PRESS LIMIT CONTROL		"ON" ANNUNCIATION											
SR-5 OPERATING PRESS CONTROL		"ON" ANNUNCIATION											
SR-6 BURNER RELAY			"ON" ANNUNCIATION										
SR-7 CR-1 CONTROL RELAY VFD			"ON" ANNUNCIATION										
SR-7 CR-2 CONTROL RELAY VFD			"ON" ANNUNCIATION										
SR-8 BLOWER AIR PRESS SWITCH				"ON" ANNUNCIATION									
STEAM PSI & FLAME MANAGEMENT													
BOILER WATER TEMP SENSOR	CONSTANT TEMP READING BUT N/A HERE								LOW HOLD BELOW 180F	PSI CONTROL ABOVE 180F	CONSTANT TEMP READING BUT N/A HERE		
STEAM PSI 1 SENSOR	CONSTANT PSI READING ALWAYS COMPARES TO "STEAM PSI 2 SENSOR" FOR SAFETY REDUNDANCY												
AVERAGE OF STEAM PSI 1 & 2 SENSORS	PSI N/A HERE			PSI HERE MUST BE AT LEAST 0.5 PSI BELOW STEAM PSI TARGET TO START BURNER AND OPERATE THROUGH WARM-UP PERIOD					HI WHEN > 0.5 PSI BELOW TARGET LO WHEN > 0.5 PSI ABOVE TARGET		OFF WHEN > 1 PSI ABOVE STEAM PSI TARGET		
STEAM PSI 2 SENSOR	CONSTANT PSI READING ALWAYS COMPARES TO "STEAM PSI 1 SENSOR" FOR SAFETY REDUNDANCY												
HIGH FIRE RELAY									ON - OFF - ON: BY STEAM PSI				
COMBUSTION AIR LOUVER	CLOSED		1.5 sec TO OPEN		OPEN	1.5 sec TO CLOSE	CLOSED	OPEN TO LOW	OPEN TO LOW	HI - LOW - HI: BY STEAM PSI	OPEN	1.5 sec TO CLOSE	CLOSED

# Air/Fuel Adjustment

## PREREQUISITE

The Burner Fan and Burner Gun Assembly SHOULD BE CLEAN before adjusting the Air/Fuel Ratio to tune the Burner.

If Flue Temperatures are running high, above 600 degrees, your Boiler Fire Tubes are likely sooted-up and will also require cleaning before tuning the Burner



3. Always watch for Smoke  
**DO NOT RUN A SMOKEY BURNER!!!**  
Unless you really enjoy cleaning  
soot from your Boiler Fire Tubes

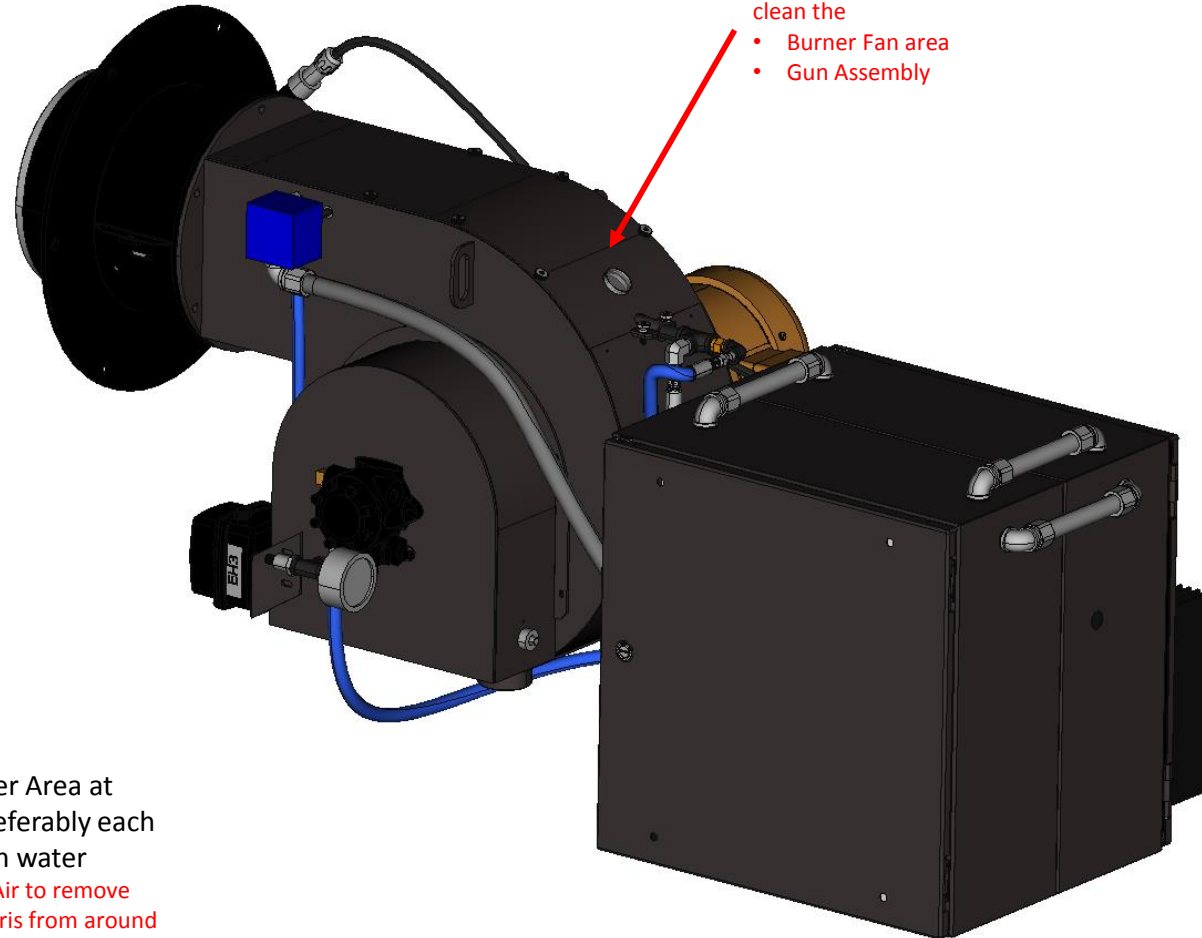
2. Adjust Air Louver Position from  
Touch Screen from the "Tune  
Burner" Menu  
Follow instructions on the Touch Screen to  
tune the Burner for both Low Fire and High  
Fire Adjustments.  
  
Remember to re-tune the Burner when  
elevation or seasonal temperatures change

1. Adjust Fuel Pump  
Pressure  
Set Fuel Pump Pressure  
to 145-150psi with  
Burner running.

# Cleaning

Page 1

1. Clean entire Burner Area at least Daily, but preferably each time you load with water
  - Use Compressed Air to remove dust and crop debris from around the Burner and Generator



2. Clean Burner Internally every 50 Hours
  - Remove this cover and use compressed air to clean the
  - Burner Fan area
  - Gun Assembly

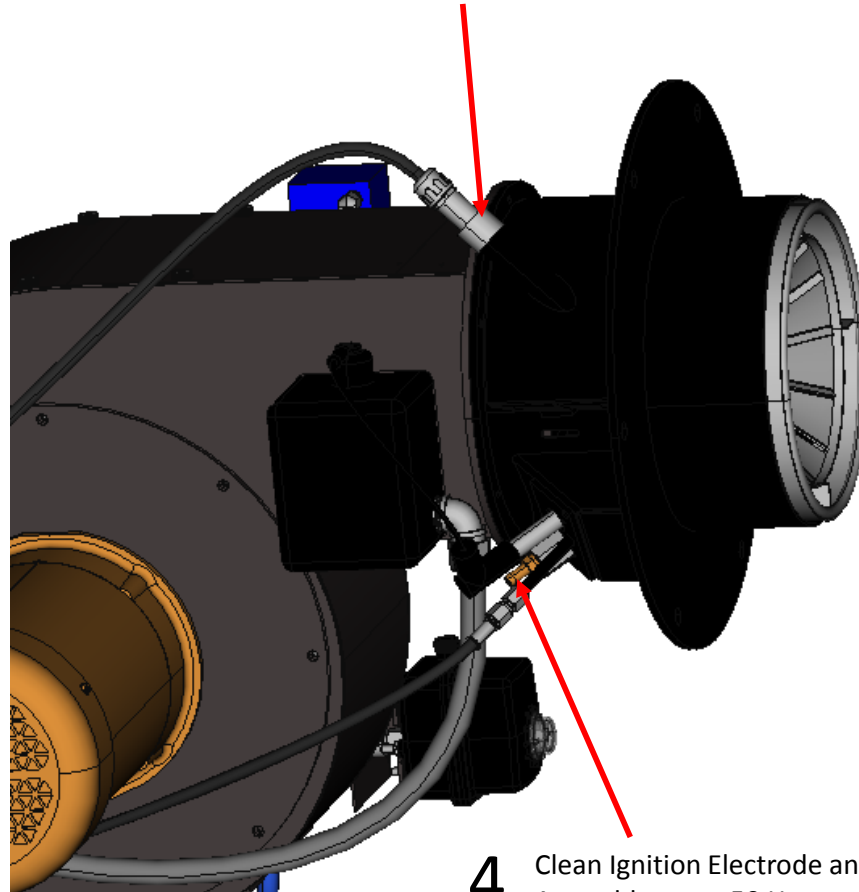


# Cleaning

Page 2

## 3. Clean Burner Flame Sensor and Sight Tube every 50 Hours

Remove Sensor from Tube to clean



## 4. Clean Ignition Electrode and Propane Tube Assembly every 50 Hours

- Use Compressed Air to remove dust and crop debris from the Ignition Assembly by attaching your air compressor hose to the short Red Air Hose that is attached to this port.
- Then turn on your air hose 4-5 times for 2-3 seconds each time.

# Reference Resources

For Complete DewPoint 6110 Burner Training Videos, Go To:

[www.staheliwest.com](http://www.staheliwest.com)

- Login
- Customer Portal
  - User name: customer
  - Password: dewpoint
- 6210 Burner Videos

# Sensors

Sensor	Function/Range	Normal Range	Trip/Alarm	Options
Supply Water Level	0-1000 gallons		Below 200 gal	Disable in Settings/Alarm Status Screen
Fuel Supply Level	0-300 gallons		Below 30 gal	Disable in Settings/Alarm Status Screen
Ambient Temperature	32° - 212° F		Above 110° F	Disable in Settings/Alarm Status Screen Adjust in Settings/Alarm Settings
Low Water Cut-Off 1	actuate on contact with water		Below about 1 inch in site glass	
Low Water Cut-Off 2	actuate on contact with water		Below about 1 inch in site glass	
Manual Steam Pressure Gauge	0 - 30 psi			
High Pressure Limit Switch	set at 15.0 psi		Opens above 15 psi	
Operating Pressure Limit Switch	set at 14.5 psi		Opens above 14.5 psi (auto reset)	
Boiler Water Level	0 - 12 in.	4 - 8 in	Below 4 in. Above 10 in.	Level adjustable in Settings/Water System
Steam PSI 1 Transducer	0 - 30 psi	6 - 13 psi	More than 2 psi differential	Selectable and Differential Limit adjustable in Setting/Boiler Pressure Screen
Steam PSI 2 Transducer	0 - 30 psi	6 - 13 psi	More than 2 psi differential	Selectable and Differential Limit adjustable in Setting/Boiler Pressure Screen
Feed Water Temperature	0 -300° F	100 - 240° F	Above 150° F differential	Disable in Settings/Alarm Status Screen Adjust in Settings/Alarm Settings
Boiler Water Temperature	0 -300° F	100 - 240° F	Above 150° F differential	Disable in Settings/Alarm Status Screen Adjust in Settings/Alarm Settings
Rear Door Temperature	0 -300° F	100 - 150° F	Above 250° F	Disable in Settings/Alarm Status Screen Adjust in Settings/Alarm Settings
Propane Pilot Pressure	0 - 100 psi	10 - 12 psi	Below 5 psi	Disable in Settings/Pilot Propane Reset Count etc.
Fuel Pump Pressure Gauge	0 - 300 psi	145 - 155 psi		
Fuel Pump Pressure Transducer	0 - 500 psi	145 - 155 psi		
Nozzle 1 pressure	0 - 500 psi	145 - 155 psi	if 20 psi less than Fuel Pump High Fire if 30 psi less than Fuel Pump High Fire	Disable in Settings/Alarm Status Screen
Nozzle 2 pressure	0 - 500 psi	145 - 155 psi	if 20 psi less than Fuel Pump High Fire if 30 psi less than Fuel Pump High Fire	Disable in Settings/Alarm Status Screen
Flue Temperature	0 - 1000° F	300 - 450° F	Above 600° F	Disable in Settings/Alarm Status Screen Adjust in Settings/Alarm Settings
Air Flow Sensor				Communicates with Honeywell Controller to indicate airflow in burner.
Infrared Flame Detector	0 -15v (Screen Reading)	3-15 v (Screen Reading)		Works with Honeywell Controller Flame Amplifier card to detect presence of Flame.